THE

REVENUE REGISTER.

No. 9.] MADRAS:—TUESDAY, SEPTEMBER 15, 1874. [Vol. VIII.

A RYOT'S ESTATE—II.

In the July issue of the *Revenue Register*, in which we endeavoured to combat the views expressed by their Lordships, Innes and Kernan, J. J., as to the character of a ryot's estate, appeared another judgment of the High Court (present, Holloway and Innes, J. J., R. A. 133 of 1872) in which his Lordship Mr. Justice Holloway uses exactly the same language, speaking of ryots as 'tenants from year to year,' and a puttah-holding as a 'letting from year to year.' Our own opinion as to the *proprietary* character of a ryot's estate has been repeated with an iteration, for which we need make no apology on account of the supreme importance of the subject*—*vide* 'The Land Revenue of India,' Vol. V; 'The Tenure of the Soil,' Vol. V; 'Tenants on Proprietary Estates and Government Ryotwari Tenants,' Vols. VI and VII; 'Fifty Per Cent of the Net,' Vol. V; and 'Zemindary Tenures in Madras,' Vol. V. But as the High Court appear determined to adhere to their dictum, that a ryot holding under an ordinary ryotwari puttah is only a 'tenant from year to year,' it seems desirable to go back to first principles and try to ascertain what after all a ryotwari puttah is, and what kind of estate it confers on the puttahdar, if it actually confers any kind of *estate* at all, which indeed begins to seem doubtful.

What then is a puttah? It is simply a bill for money to be paid on account of the assessment fixed on a certain property; and this assessment represents a *fixed share* of the produce of the property in question, commuted into a money payment *fixed* for a certain period of time. Very little is *expressed* in a puttah. But by the common law of India, a puttah *implies* a great deal; and though not couched in the language of a formal conveyance, it does by immemorial custom *convey* waste land to the puttahdar in *absolute proprietary right*, subject only to the payment of an assessment which (as remarked at page 195) is *not*, and is not intended to be, a *rent-charge*, but merely a land-tax. We say that the right conferred by the agreement, whereof the puttah is the only *written* evidence, is an *absolute proprietary* right, because if the property does not vest in the puttahdar, it is difficult to see in whom it does vest. As long as the land is unoccupied—properly speaking

* In the words of an eminent Hindoo, "a clear and "precise understanding of the relative rights of the land-"lord and tenant in the soil is of vital importance to the "peace and harmony of its teeming millions." (The Hon'ble Degumber Mitter. Volume V, *Indian Economist*, page 319).

The chaotic condition of Madras law in this particular instance, and at that time has been clearly shown in our issue of the 6th December 1872, page 380. It has become a good deal more confused since that date, though perhaps more consistent in destroying the proprietary character of the ryot's estate.

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'not held on puttah,' or waste as it is technically called—it is undoubtedly at the absolute disposal of Government, as a general rule; but when once a puttah has been granted for any land, or, more strictly speaking, for the assessment to be paid on account of any land, Government has no power to interfere further with it in any way; whereas the puttahdar can transfer it by mortgage, gift, or sale, can exercise every possible form of ownership over it, without reference to the Government or to any one else; *provided only* that the transfer be duly registered. As Kaye observes (Hist. of Sepoy War, Vol. I, p. 156, 3rd Ed.), "to be charged with the payment "of the revenue was to be acknowledged "as the *proprietor* of the land." And it has always been acknowledged to be so by all the great masters of revenue administration. Hear what the greatest of all says:—

"There is no reason to suppose that pri- "vate landed property ever, at any one time, "existed upon the *same footing* over the "greater part of India. From Pulicat to "Ganjam, in the Ceded Districts, the Bara- "mahl and Coimbatore, it seems to have "been always, as now,* little known except "as inam from the sovereign. Along the "Malabar Coast and above the Western "Ghauts, from Sunda to Wynaad, it seems "to have existed *from a remote period, as "now, almost universally*, and in the Carna- "tic, Tanjore, and Madura." And again:—"It has been supposed by some that the "Zemindars were the landlords or proprie- "tors, and the ryots their under-tenants or "labourers, and by others that the sove- "reign was the sole landlord, and the ryots "*mere cultivating tenants. But the ryot is "the real proprietor*, for whatever land does "not belong to the sovereign *belongs to him.* "The demand for public revenue, accord- "ing as it is high or low, in different places "and at different times, *affects his share*; "but whether it leaves him only the bare "profit of his stock, or a small surplus "beyond it, as landlord's rent, he is still "the *true proprietor*, and possesses all that "is not claimed by the sovereign as "revenue."

* 1824. It has been developed a good deal since then, as the records of our Courts in these Districts prove.

We have *italicised* a few of the strongest passages, and we might quote pages more to the same effect; but we have already drawn largely from the same Minute in compiling our article entitled 'Zemindary Tenures in Madras,' Vol. V, p. 135; and any one who takes any real interest in the status of the ryot, should carefully study the whole Minute (dated 31st Dec. 1824). It is extremely improbable that any single European will ever again be able to acquire the same experience of the country, and the same extensive knowledge of its common law, as the greatest of all the Madras Governors, Sir Thomas Munro; and if we must choose a leader to guide us through the labyrinth of Indian custom or common law, we would elect him in preference to the High Court, or any Governor of later days.

But it seems mere waste of words to argue the question. Over and over again have Government been compelled to admit that they have no *right* to transfer any part of the ryot's property in his land to any one else; and even their right to confer upon any one else the limited power to collect the assessment has been often called in question. It is, to say the least of it, a harsh and impolitic proceeding, if it is not directly opposed to the whole spirit of a ryotwari settlement. One of the latest authoritative descriptions of the ryotwari tenure was given by the Revenue Board in their Proceedings, No. 125, dated 30th January 1873, in paragraph 2 of which they say, the "cultivator is, to all intents and

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"purposes, a *peasant-proprietor,* his right "of property in his land being indefeasible, "unless and until he fails to pay the "*land-tax* due on it." The puttah is not *necessarily* renewed or altered every year; and the only ground for the extraordinary supposition that the land is 'let from year to year' is to be found in the fact that the bill for assessment has to be altered sometimes on account of the ryot having either taken up or relinquished land, or because he is entitled to some remission of tax on account of failure of water, or is liable to some extra charge for irrigation. But many puttahs remain without alteration for years, and the puttahdars never even think of attending the annual settlement to get their puttahs renewed. What then is this 'letting from year to year,' which Mr. Justice Holloway speaks of? And what do the High Court mean when they call ryots 'tenants from year to year?' Is it possible that we have been the victims of some lurking fallacy, and that 'tenants from year to year' may be the peasant proprietors of our fondest dreams? We would fain hope so: for if the ryot-proprietor has really no more rights in the soil than what we understand by a 'tenant from year to year,' we must abandon as an idle dream the principle sought to be inculcated by Sir Thomas Munro in the following words—"Government will have it in its power to lay the "foundation of landed property in the land "of the ryots, where *alone,* in order to "be successful, it must be laid (1824)." Indeed, the great object of the English administration in India—the development of private rights—would appear to have been lost. We *thought* indeed (with Doctor Hunter) that we had 'reared up a permanent *proprietary body,*' but behold at the touch of the High Court it has crumbled into a body of miserable 'tenants holding from year to year.'

HER MAJESTY'S PRIVY COUNCIL.

[Madras Case.]

Storing of water—Escape—Injury—Damages.

Where the Madras Railway Company claimed damages from the Zemindar of Carvetinagarum for injury caused to their line by the bursting of a tank on his land, and contended that, in storing water on his land the Zemindar rendered himself liable in damages for any escape of water and consequent injury to another, and that he had been guilty of negligence—

Held, *that the storing of water in tanks in India is a public duty and had devolved on the Zemindar at the time of the settlement; that he had no power to do away with the tank; that his rights and liabilities were somewhat analogous to those of persons or corporations on whom statutory powers have been conferred and statutory duties imposed; and that as to the fact of negligence, the two concurrent judgments of the Courts in India, finding no negligence, must stand.*

Judgment of the Lords of the Judicial Committee of the Privy Council on the appeal of the Madras Railway Company *v.* The Zemindar of Carvetinagarum, from the High Court of Judicature at Madras, delivered 3rd July 1874.

Present.

Sir James W. Colvile.
Sir Barnes Peacock.
Sir Robert P. Collier.

Sir Lawrence Peel.

The Madras Railway Company claimed in this suit damages against the defendant, the Zemindar of Carvetinagarum, for injuries occasioned to their railway and works by the bursting of two tanks upon his land.

The defendant denied that the injuries complained of resulted from the bursting of the tanks; he asserted that if they did so arise, the bursting was caused by no act or negligence of his, but by *vis major,* or the act of God. He further pleaded in these terms:—

"4. The tanks referred to in the plaint have existed from time immemorial, and are requisite and absolutely necessary for the cultivation and enjoyment of the land, which cannot be otherwise irrigated; and the practice of storing water in such tanks in India, and particularly in this district and in the Zemindary of Carvetinagarum and the adjacent districts, is lawful, and is sanctioned by usage and custom. The said zemindary is a hilly district, and the ryots will be unable to carry

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on their cultivation without such tanks, they being the chief source of irrigation, and the omission to store quantities of water in such tanks will be attended with consequences dreadful to the inhabitants of the country.

"7. The defendant could not have avoided collecting a quantity of water in the tanks during the monsoon, and he has not failed to use any reasonable care that may be expected from him. There were also several tanks and channels above his tank belonging to Government and other people, which also burst at the same time."

He also contended that the damage arose through want of proper care on the part of the defendants in the construction of their works, but this contention was abandoned. It was found by both Courts, and is not now disputed, that the works of the plaintiffs did suffer serious damage from the bursting of the tanks; these last two questions, therefore, need not be further referred to.

The issues, as far as they are material to this appeal, agreed to by the parties, were—

1. Whether the injuries complained of were the result of *vis major*, or the act of God, or other influences beyond the defendant's control.

2. Whether defendant is liable for any, and if so what, damages sustained by the plaintiffs.

The evidence given in the cause may be summarized as follows:—It was shown that the tanks of the defendant, which were ancient tanks, the date of their origin not appearing, were constructed in the usual manner; that the banks were properly attended to and kept in repair; that sluices and outlets for the water were provided of the kind usually employed both in private and Government tanks, and usually found sufficient, and which had proved sufficient to prevent any overflow or bursting of the tanks in question for twenty years; but that an improved description of sluice, of recent introduction, would be still more efficacious. That at or some days before the accident there had been an unusual and almost unprecedented fall of rain, described by the Deputy Inspector of the Railway as the heaviest he had ever seen during his residence of thirteen years in the locality, and by witnesses for the defendant as exceeding any fall of rain for twenty years; that this extraordinary flood, which caused the neighbouring river to overflow, and possibly brought down to the tanks, whose overflowing is complained of, the contents of other tanks at higher levels, proved more than the sluices could carry off, that the banks of the tanks were overflowed, and finally carried away.

Upon these facts the Acting Civil Judge of the Civil Court of Chittoor found for the defendant, holding that he was not liable in the absence of negligence, and that he had not been negligent.

This judgment was affirmed by the High Court on appeal.

The appellant now contends that the judgment of the High Court should be reversed on two grounds—

1*st*. That the defendant, by storing up water on his land, rendered himself liable in damages should it escape and do injury to other persons, even though he might not have been guilty of negligence.

2*nd*. That both the Indian Courts have applied an erroneous rule of law to the consideration of the question of negligence.

The case mainly relied upon in support of the first contention is *Fletcher* v. *Rylands*, Law Reports, 3, House of Lords, 330, which it becomes necessary to examine. In that case the plaintiffs, the owners of a mine, sued for damages, the defendants, owners of some adjacent land, who had constructed a reservoir on their land for the purpose of working a mill, from which reservoir water flowed through some disused mining works into the plaintiff's mine, and flooded it. It was held by the Exchequer Chamber and by the House of Lords that the plaintiffs were entitled to damages against the defendants.

The grounds of this judgment are stated very clearly and shortly by the then Lord Chancellor (Lord Cairns), and Lord Cranworth.

The Lord Chancellor says:—

"The principles on which this case must be determined appear to me to be extremely simple. The defendants, treating them as the owners and occupiers of the close on which the reservoir was constructed, might lawfully have used that close for any purpose for which it might, in the ordinary course of the enjoyment of the land, be used; and if, in what I may term the natural use of that land, there had been any accumulation of water, either on the surface or underground; and if, by the operation of the laws of nature, that accumulation of water had passed off into the close occupied by the plaintiff, the plaintiff could not have complained that that result had taken place. If he had desired to guard himself against it, it would have lain upon him to have done so, by leaving, or by interposing, some barrier between his close and the close of the defendants, in order to have prevented that operation of the laws of nature. . . . On the other hand, if the defendants, not stopping at the natural use of their close, had desired to use it for any purpose which I may term a non-natural use, for the purpose of introducing into the close that which, in its natural condition, was not in or upon it, for the purpose of introducing water either above or below ground in quantities, and in a manner not the result of any work or operation on or under the land; and if, in consequence of their doing so, or in consequence of any imperfection in the mode of their doing so, the water came to escape and pass off into the close off the plaintiff, then it appears to me that that which the defendants were doing, they were doing at their own peril; and if, in the course of their doing it, the evil arose . . . of the escape of the water and its passing away to the close of the plaintiff, and injuring the plaintiff,

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then, for the consequence of that, in my opinion, the defendants would be liable."

Lord Cranworth thus states the principle of the decision :—

"If a person brings and accumulates on his land anything which, if it should escape, may cause damage to his neighbour, he does so at his peril. If it does escape and cause damage, he is responsible, however careful he may have been, and whatever precautions he may have taken to prevent the damage . . . . and the doctrine is founded in good sense. For when one person in managing his own affairs, causes, however innocently, damage to another, it is obviously only just that he should be the party to suffer. He is bound *sic uti suo ut non lædat alienum.*"

But the principle that a man, in exercising a right which belongs to him, may be liable, without negligence, for injury done to another person, has been held inapplicable to rights conferred by Statute.

This distinction was acted upon in *Vaughan* v. *The Taff Vale Railway Company*, 5, Hurlston and Norman, 679, where it was held by the Exchequer Chamber that a railway company were not responsible for damage from fire kindled by sparks from their locomotive engine, in the absence of negligence, because they were authorized to use locomotive engines by Statute. Cockburn, C. J., observes, "where the Legislature has sanctioned and authorized the use of a particular thing, and it is used for the purpose for which it was authorized, and every precaution has been observed to prevent injury, the sanction of the Legislature carries with it this consequence, that if damages result from the use of such a thing independently of negligence, the person using it is not responsible." This view is fortified by the consideration that the Legislature may be presumed not to have conferred special powers on persons or companies, without being satisfied that the exercise of them would be for the benefit of the public, as well as of the grantees. On the same principle it was decided that a water-works company laying down pipes by a statutory power, were not liable for damages occasioned by water escaping in consequence of a fire-plug being forced out of its place by a frost of unusual severity. (*Blyth* v. *The Birmingham Waterworks Company*, 25, L. J., p. 212).

On the other hand, in *Jones* v. *The Festiniog Railway Company* (3, L. R., Q B., 733) it was held that a railway company which had not express statutable power to use locomotive engines, was liable for damage done by fire proceeding from them, though negligence on the part of the company was negatived.

It has been argued on the part of the respondent that the case of *Fletcher* v. *Rylands* decided on the relations subsisting between adjoining landowners in this country, has no application whatever to India. Though that case would not be binding as an authority upon a Court in India not administering English law, their lordships are far from holding that, decided as it was, on the application of the maxim, *sic utere tuo ut alienum non lædas*, expressing a principle recognized by the laws of all civilized countries, it does not afford a rule applicable to circumstances of the same character in India,—they are of opinion, however, that the circumstances of the present case are essentially distinguishable.

The tanks are ancient, and formed part of what may be termed a national system of irrigation, recognized by Hindoo and Mahomedan law, by Regulations of the East India Company, and by experience older than history, as essential to the welfare, and, indeed, to the existence of a large portion of the population of India. The public duty of maintaining existing tanks, and of constructing new ones in many places, was originally undertaken by the Government of India, and upon the settlement of the country has, in many instances, devolved on Zemindars, of whom the defendant is one. The Zemindars have no power to do away with these tanks, in the maintenance of which large numbers of people are interested, but are charged under Indian law, by reason of their tenure, with the duty of preserving and repairing them. From this statement of facts referred to in the judgment of the High Court, and vouched by history and common knowledge, it becomes apparent that the defendant in this case is in a very different position from the defendant in *Fletcher* v. *Rylands*.

In that case the defendants, for their own purposes, brought upon their land and there accumulated a large quantity of water by what is termed by Lord Cairns "a non-natural use" of their land. They were under no obligation, public or private, to make or to maintain the reservoir; no rights in it had been acquired by other persons, and they could have removed it if they had thought fit. The rights and liabilities of the defendant appear to their lordships much more analogous to those of persons or corporations on whom statutory powers have been conferred and statutory duties imposed. The duty of the defendant to maintain the tanks appears to their lordships a duty of very much the same description as that of the Railway Company to maintain their railway; and they are of opinion that, if the banks of his tank are washed away by an extraordinary flood without negligence on his part, he is no more liable for damage occasioned thereby than they would be for damage to a passenger on their line, or to the lands of an adjoining proprietor occasioned by the banks of the railway being washed away under similar circumstances. (See *Withers* v. *The North Kent Railway Company*, 27, L. J., Ex., p. 417).

The second ground on which the appellant relied was not so clearly stated; their lordships

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understood it to be, in substance, that the Court below and the High Court estimated by a wrong standard the amount of care which the law requires of the defendant.

It should be observed that the question of negligence was little, if at all, argued in the High Court.

The Judge of the Court below quotes and applies to the case the following definition of negligence by Baron Alderson:—"Negligence consists in the omitting to do something that a reasonable man would do, or in the doing something that a reasonable man would not do, in either case unintentionally causing mischief to a third party;" and the High Court confirm this view of the law. Without adopting every expression of the Judge of the inferior Court, their lordships are unable to say that the case has been decided on an erroneous view of the law. On the question of fact whether or not negligence was proved by the evidence, they see no sufficient reason for departing from their ordinary rule of not disturbing the concurrent finding of two Courts.

For these reasons their lordships will humbly advise Her Majesty that the judgment of the Court below should be affirmed, and the appeal dismissed with costs.

CIRCULAR ORDERS OF THE BOARD OF REVENUE.

No. X.

STANDING No. 86-1.

PLANTING ON IRRIGATION WORKS—IN CONSULTATION WITH IRRIGATION DEPARTMENT.

Proceedings of the Board of Revenue, dated 3rd March 1874, *No.* 465.

WITH reference to Nos. 16 and 17 of the Rules for the preservation of jungles attached to Board's Standing Order, No. 86, Collectors will understand that* no planting operations in connection with irrigation works should be undertaken without the concurrence of the officers of the Irrigation Department.

* G. O., dated 5th January 1874, No. 6.

No. XI.

STANDING No. 320-2.

PROGRESS REPORTS BY COLLECTORS' FOREST SUBORDINATES.

Proceedings of the Board of Revenue, dated 12th March 1874, *No.* 556.

IN future Collectors will be good enough to send the Monthly Progress Reports submitted to them by their Forest subordinates to the Inspector of Forests in original.

2. It would be well if the reports were written on "half margin" so that the Collector may be able to call the attention of the Inspector to any point on which he may desire to elicit that officer's views.

3. The Progress Reports should contain a section devoted to Railway Fuel Reserves and Plantation.

4. The Half-yearly Reports on Railway Fuel Reserves and Plantations should be forwarded to the Board through the Inspector of Forests.

No. XII.

STANDING No. 377-1.

COLLECTORS TO OBTAIN GOVERNMENT SANCTION BEFORE TAKING ANY PROCEEDINGS TO DEFEND THEMSELVES.

Proceedings of the Board of Revenue, dated 14th March 1874, *No.* 579.

COLLECTORS must obtain, through the Board, authority from Government before having recourse to the Courts for the vindication of their public acts or their characters as public functionaries from defamatory attacks in newspapers. Their right to defend their private dealings is in no way affected by this order.

G. O., dated 12th February 1874, No. 74.

No. XIII.

STANDING No. 207-7.

PETTY WORKS TO BE EXECUTED BY REVENUE DEPARTMENT ALONE.

Proceedings of the Board of Revenue, dated 15th April 1874, *No.* 881.

PETTY Construction and Repair works should be carried out by the Revenue Department.

2. The execution of such works by the Department Public Works is opposed to orders, and Collectors should in no case place funds at the disposal of officers of that Department for such a purpose.

No. XIV.

STANDING No. 55-1.

OLD BUILDINGS, &c. NOT TO BE SOLD WITHOUT REFERENCE TO PUBLIC WORKS DEPARTMENT.

Proceedings of the Board of Revenue, dated 20th April 1874, *No.* 927.

OLD Fort walls* or other old buildings should not be offered for sale to private parties until a reference has been made to the Officers of the Public Works Department as to

* G. O., dated 27th February 1874, No. 271.

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whether the materials are likely to be wanted for public buildings or for Municipal improvements, in which case, they should not be sold.

No. XV.

STANDING No. 275-3.

ALTERATION OF FORM 7 IN STANDING ORDER 275.

Proceedings of the Board of Revenue, dated 28th April 1874, No. 990.

IN Form 7, Standing Order No. 275, for the heading of the last column of the Statement at the foot of the Form, substitute "amount payable by the purchaser on account of the kists for the current fusly falling due after the date of the sale."

No. XVI.

STANDING No. 195-3.

ADDITIONAL CLAUSE TO ABKARRY SALE ADVERTISEMENT.

Proceedings of the Board of Revenue, dated 8th May 1874, No. 1,071.

AFTER Clause X of the advertisement of an Abkarry sale insert—

"XI. In the case of the purchaser's death the agreement made by him will be binding on his heirs and assigns."

No. XVII.

STANDING No. 198-2.

ADDITIONS TO ABKARRY FORMS A AND B.

Proceedings of the Board of Revenue, dated 8th May 1874, No. 1,073.

Form A.—License to Abkarry Rents.—In the first clause after C. D. enter "his heirs and assigns."

Form B.—In the first clause after "myself" insert the words "my heirs and assigns."

No. XVIII.

STANDING No. 200-4.

SUB-COLLECTORS TO INSPECT SALT PANS IN THEIR DIVISIONS.

Proceedings of the Board of Revenue, dated 21st May 1874, No. 1,195.

CLAUSE 3, Standing Order No. XII of 1866, will be modified as follows:—

When pans are situated in the Sub-Division the Sub-Collector should similarly inspect them periodically. He will see that the Board's orders are properly carried out, and his authority will extend to the issue of any instructions which may be required for the immediate correction of irregularities; but any suggestions and recommendations which are not within the scope of existing rules must be referred for the orders of the Collector, with whom the *supreme* control will remain. The Sub-Collector might greatly assist the Salt Deputy when the latter visits his Division.

No. XIX.

STANDING No. 407-11.

TRAVELLING EXPENSES OF HOSPITAL ASSISTANTS.

Proceedings of the Board of Revenue, dated 22nd May 1874, No. 1,205.

ADVERTING to the Resolution of the Government of India, dated 31st August 1872, No. 2,233, and in modification of the Board's Standing Order, No. 407-7, all officers concerned are informed that Hospital Assistants travelling on duty by road are entitled to a mileage of only 2 Annas per mile. When they travel by rail or steamer they should draw the actual fare.

2. The above rates apply only to special journeys performed on duty. If an Hospital Assistant simply accompanies the officer to whom he is attached on his usual circuit, he should draw batta at the usual rates.

No. XX.

STANDING No. 137-A.

RULES FOR THE LEVY OF WATER-RATES.

Proceedings of the Board of Revenue, dated 1st June 1874, No. 1,313.

THE following Rules for the levy of water-rate were approved in Government Order, 25th March 1874, No. 384:—

Draft Rules for the levy of water-rate in addition to land assessment on all lands not permanently classed as wet in all districts (except Ganjam, Tanjore, Madura, Tinnevelly, Malabar, South Canara, and the Nilgiri Hills) when water is supplied from a Government source of irrigation.

I.—All dry lands temporarily cultivated with wet crops shall, in lieu of any system now in force, pay a fixed water-rate on the following scale of Standard Rates. Where water is raised by mechanical contrivances, the rates shall be reduced one-fourth, and in deltaic

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tracts when water is drawn from drainage channels one-half.

Standard Rates.	First class tanks, river and spring channels.	Second class ditto.
	RS. A. P.	RS. A. P.
a. Water-rate for a single wet crop raised on dry lands, per acre...	4 0 0	3 0 0
b. Second crop on the same land, per acre...	2 0 0	1 8 0
c. For Sugar-cane, Betel, Cocoanuts, Plantains, &c., requiring water longer than an ordinary wet crop, per acre	6 0 0	4 8 0
d. For dry crop watered, whether first or second crop, per acre ...	2 0 0	1 8 0

1. This rule does not apply to North Arcot or South Arcot, which have special rates uniform throughout the district, nor to the delta tracts of the Godavery and Kistna Districts.

2. Rate *b.* does not apply to Cuddapah.

3. In Kurnool, rate *d.*, to be reduced one-half.

II. When a portion (or portions) of a field is irrigated, and the field is not more than half an acre in extent, the charge shall be calculated on the actual extent of the field.

When the field is larger than half an acre, the extent irrigated must be carefully measured and the charge shall be made by the half acre subject to the limitation that more than the recorded extent of the field shall not be charged for.

For instance, if 1·5 acres are irrigated, the charge shall be the rate for three half-acres; if the extent irrigated is 1·55 acres, the charge shall be the rate for four half-acres, provided that, if the whole field be less than four half-acres, as for instance 1·75 acres, the charge shall be the rate for the recorded extent of the field.

III.—The Collector has power to impose prohibitory rates whenever water is taken without permission.

IV.—The above rules are applicable to all Government sources of irrigation, the supply in which is at all regular and to be depended on. Simple jungle streams which only receive a casual supply, may be utilized as hitherto without charge.

V.—No Government water is to be taken under these rules without the express sanction of the Head of the village or of the Department of Public Works Officer, when the works are in charge of that Department.

N.B.—These rules do not apply to second crop raised on *wet* land, for which the usual charge (generally half the single crop assessment) will be made.

No. XXI.

Standing No. 80-2.

Completion Certificates by Revenue Officers for works executed by other agency.

Proceedings of the Board of Revenue, dated 2nd June 1874, No. 1,324.

As the Government have ruled* that Completion Certificates for works connected with clearing village sites and planting avenues when executed by other agency may be granted by the officer in Revenue charge of the Sub-division of the Local Fund Circle without limit as to cost, the following instructions are issued for the guidance of all Revenue officers.

*G.O., Financial Department, dated 5th November 1873, No. 1,615.

2. Bills for works of the above description must be accompanied by Completion Certificates in the form used by the Public Works Department, signed by a Tahsildar for all works costing Rupees 500 or less, and by an officer in charge of a Division or a Covenanted Civilian for all works costing more than Rupees 500.

No. XXII.

Standing No. 198-4.

Condition in Form K.—Sale of liquor to Non-Commissioned Officers and Soldiers.

Proceedings of the Board of Revenue, dated 6th July 1874, No. 1,696.

In form K., Condition 3 is to be worded as follows:—

2. That the said C. D. shall not sell or give any liquor to any Non-Commissioned Officer or Soldier without the permission in writing of the Commanding Officer, nor to any member of the Mofussil Police while on duty, nor to any European vagrant under escort without the consent of the escort.

G. O., dated 16th May 1874, No. 606.

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No. XXIII.

STANDING No. 404-15.

ARRANGEMENTS WHEN UNCOVENANTED SERVANTS ON LESS THAN 100 RUPEES TAKE LEAVE.

Proceedings of the Board of Revenue, dated 3rd August 1874, *No.* 2,062.

G. O., dated 2nd July 1874, No. 19.

IN ordinary cases, when privilege leave is granted to Uncovenanted Officials, whose salary is less than Rupees 100, no acting appointment, even without pay, should be made. Other means must be found for the discharge of the Magisterial duties of the officers taking leave, should they have any such work.

2. If exceptional circumstances seem to render it necessary to appoint an acting substitute for the absentee, those circumstances should be stated.

No. XXIV.

STANDING No. 399-16.

RULES FOR GUIDANCE OF PRESIDENTS OF LOCAL FUND BOARDS.

Proceedings of the Board of Revenue, dated 3rd August 1874, *No.* 2,065.

G. O., F. D., dated 13th March 1874, No. 431.
G. O., F. D., dated 25th June 1874, No. 1,068.

UNDER instructions from Government, the following Rules are circulated for the information and guidance of all the Presidents of Local Fund Boards.

1. The following servants on the Local Fund Establishment will be pensioned under the Rules of the Pension Code :—

Overseers, Sub-Overseers, 1st, 2nd, and 3rd grades, Lascars. } Petty Establishment (Road Fund).

Inspecting Schoolmasters. Masters of Local Fund Schools of the middle and higher classes.
Vaccinators and Superintendents of Vaccination.

Clerks and Peons, Moochees and Attenders in Offices of Control at the Presidency and in the offices of Collectors and Local Fund Boards.

2. When service qualifying for pension has been performed partly under Government and partly under Local Fund Boards, or when officials have been paid partly from Imperial Funds and partly from the Local Fund, the pension will be divided in proportion to the total pay received from Government and the Local Fund.

3. When a Local Fund servant is pensioned, the Local Fund pension shall be provided as follows :—

(*a.*) In the case of servants employed in particular Circles, the pension shall be provided by the Local Fund Board of the Circle in which he was employed.

(*b.*) In the case of servants employed in the Collectors' Offices, the pension shall be provided by the Local Fund Boards of the Collectorate in proportion to the assets of each Board.

(*c.*) In the case of servants employed in the Controlling Offices at the Presidency, the pension shall be provided by the several Local Fund Boards of the Presidency, in proportion to their assets, as determined by the Board of Revenue.

No. XXV.

STANDING No. 407-12.

FREE CONVEYANCE BY RAIL TO HOSPITAL ASSISTANTS' FAMILIES.

Proceedings of the Board of Revenue, dated 10th August 1874, *No.* 2,171.

G. O., dated 10th June 1874, No. 642.

HOSPITAL Assistants travelling on duty, in the Civil Department, by rail, are entitled to free conveyance for their wives and children with one servant.

No. XXVI.

STANDING No. 295 AND 335-4.

PRESIDENTS OF LOCAL FUND BOARDS TO GRANT OR REFUSE COPIES OF LOCAL FUND PAPERS.

Proceedings of the Board of Revenue, dated 13th August 1874, *No.* 2,231.

* G. O., dated 17th June 1874, No. 1,014, Financial Department.

* THE grant or refusal of copies of Local Fund papers addressed to, or issued by, Circle Authorities is left to the discretion of the Presidents of Local Fund Boards.

2. The rules now in force in the Revenue Department and set forth in the Board's Standing Orders apply in the case of granting copies of other Local Fund papers and also as regards suits in which Local Fund Boards are concerned.

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OFFICIAL PAPERS.

Revenue Settlement and Collections—Madras—Fusly 1282.

Proceedings of the Madras Government, Revenue Department, 23*rd June* 1874.

Read the following Proceedings of the Board of Revenue, dated 25th March 1874, No. 669:—

Prefatory.—The Board resolve to submit to Government their Report on the Revenue Settlement and Collections of the Madras Presidency for Fusly (Revenue year) 1282 (1st July 1872 to 30th June 1873), accompanied by the prescribed statements and a file of the printed Reports of the Collectors.

2. Territorial Changes.—There was no change in the number of districts or taluks, but in the number of Ryotwari villages brought under settlement there were some variations in the districts noted below:—

	Taluks.	Villages.
Fusly 1281 ...	156	27,736
„ 1282 ...	156	27,683
Decrease... ...		53

—	Increase.	Decrease.
Ganjam	...	10
Vizagapatam	...	1
Godavery	...	15
Kistna	6	...
Cuddapah	...	13
Chingleput	...	21
North Arcot	1	...
South Arcot	...	3
Madura	2	...
Coimbatore	2	...
Salem	...	1

3. The variations are due (1) to the amalgamation and division of villages made for the sake of convenience; (2), to the settlement on the Ryotwari system of villages formerly rented out, and the renting out or taking under Government management of villages formerly settled on the Ryotwari system; (3), to an Inam village becoming Ryotwari in North Arcot in consequence of its having been bought in by Government when sold for arrears of revenue; and (4), to the desertion by its inhabitants of one village in Vizagapatam.

4. There were on the whole 33,973 more puttahs issued during Fusly 1282 than in the preceding year, as will be observed from the subjoined abstract:—

—	Number of fresh Puttahs.	Old Puttahs modified by additional entries.	Old Puttahs not altered.	Total.
	No.	No.	No.	No.
Fusly 1281	474,018	828,325	1,106,744	2,409,087
„ 1282	296,220	390,742	1,756,098	2,443,060
	Decrease.	Decrease.	Increase.	Increase.
	177,798	437,583	649,354	33,973

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5. The increase in the total number of puttahs issued is spread over several districts and is due to ordinary causes, *i.e.*, new applications for lands and sub-divisions of joint holdings in the course of inheritance, or in consequence of sale or gift of portions of holdings. The number of fresh puttahs issued and of those modified by additional entries is, however, smaller, in consequence of the absence of the special causes which contributed to an increase in Fusly 1281. In the last named fusly a large number of fresh puttahs had to be issued, and a still larger number, modified in consequence of the introduction of the new survey areas and settlement rates in some districts, and of the Local Fund Act, IV of 1871, coming into force throughout the Presidency. In Fusly 1282 no change in the puttahs, under Act IV of 1871, was called for, and the new rates of assessment and survey areas were introduced in fewer taluks than in Fusly 1281.

6. Season.—A most unusual quantity of rain fell in Fusly 1282. The north-east monsoon began early and was very heavy at first. There were inundations in the Godavery and Kistna Districts. Many huts sunk into the mud in Madras, and it was possible for some days that the two large tanks, situated not far from the town and on a higher level, would burst and do great damage. In February, which is generally free from rain and is a harvest month, and one in which much salt is manufactured, there was a heavy downpour which did great damage to the crops, especially in North Arcot, South Arcot and Tanjore, and washed away large quantities of salt. Thus though the seasons were better than those of Fusly 1281, and were on the whole decidedly good, the harvests suffered in most places from unseasonable or too abundant rain. Malabar on the Western Coast was unfortunate. The south-west monsoon failed in the Tenkarei Taluk in Tinnevelly. The north-east monsoon was scanty in Coimbatore.

Rain-fall.

Districts.	April to September 1872.	October 1872 to March 1873.	Total from April 1872 to March 1873.	Total from April 1871 to March 1872.
	Inches.	Inches.	Inches.	Inches.
1. Ganjam	43·52	16·02	59·54	29·79
2. Vizagapatam	35·35	16·79	52·14	25·52
3. Godavery	30·55	15·49	46·04	30·45
4. Kistna	21·21	15·11	36·32	25·71
5. Nellore	14·64	33·22	47·86	35·80
6. Cuddapah	20·23	20·77	41·00	24·37
7. Bellary	19.06	8·63	27·69	20·69
8. Kurnool	21·04	7·41	28·45	23·64
9. Madras	18·93	59·81	78·74	53·23
10. Chingleput	27·72	50·42	78·14	47·69
11. North Arcot	24·45	28·19	52·64	39·43
12. South Arcot	25·58	38·20	63·78	44·11
13. Tanjore	23·38	33·03	56·41	41·38
14. Trichinopoly	24·23	23·43	47·66	32·98
15. Madura	14·20	14·19	28·39	25·94
16. Tinnevelly	7·88	19·94	27·82	21·02
17. Coimbatore	17·79	9·93	27·72	26·29
18. Nilgiris	30·50	27·65	58·15	55·65
19. Salem	25·39	13·04	38·43	28·46
20. South Canara	167·70	5·70	173·40	144·62
21. Malabar	103·31	12·33	115·64	125·12

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7. Sanitary Condition.—Notwithstanding the abundant rain the year was not a healthy one, and the amount of mortality during the year was greater than in its predecessor.

	Fusly 1281. Deaths.	Fusly 1282. Deaths.
Cholera	11,678	6,675
Small pox... ...	29,371	48,921
Fever	187,465	225,414
Bowel complaint.	36,821	34,657
Other diseases...	180,385	190,200
	445,720	505,867

The District of Vizagapatam suffered the most, and the total number of deaths was double that of the preceding year. Cholera appeared in an epidemic form in Ganjam at the close of the Fusly 1281, and passed at the beginning of the year through Vizagapatam to Godavery. Prompt measures, however, were taken to check the spread of the disease, and medicines were freely distributed. The Districts of Cuddapah, Bellary, Chingleput, Coimbatore, and the Nilgiris enjoyed absolute immunity from this disease, and the total number of deaths from cholera in Fusly 1282 was less than that in Fusly 1281 by about 5,000. Small-pox and fever raged all over the Presidency, and the deaths thus caused were respectively 19,550 and 37,949 more than in the preceding year. The new species of fever, dengue, which is more painful than deadly, prevailed in the Districts of Vizagapatam, Bellary, Kurnool, Chingleput, Tanjore, Trichinopoly, and part of Salem, and was particularly severe in Trichinopoly, where it is said to have entered every house. There was no want of pasturage, but cattle disease prevailed in almost every District. The excessive rains appear to have told upon the health of the cattle, and large numbers died from the effects of wet weather. On the whole, however, the mortality among the cattle appears to have been less than in the previous year.

Districts.	Population of villages from which returns were received.	Cause of Death.						Ratio per mile of population.	Remarks.
		Cholera.	Small-pox.	Fevers.	Bowel complaint.	Other diseases.	Total.		
Ganjam	905,036	589	467	13,090	679	3,124	17,949	19·83	
Vizagapatam... ...	1,509,750	3,632	1,947	23,473	739	7,918	37,709	24·31	
Godavery... ...	1,592,939	1,337	4,330	15,758	1,035	10,593	33,053	20·75	
Kistna	1,452,374	144	2,213	12,307	671	10,818	26,153	18·01	
Nellore	1,376,811	576	831	8,936	770	6,919	18,032	13·10	
Cuddapah	1,351,194	......	865	12,466	668	3,861	17,860	13·22	
Bellary	1,668,006	......	2,015	9,176	2,105	16,561	29,857	17·89	
Kurnool	959,640	129	962	12,652	704	2,755	17,202	17·92	
Madras	....	......	......	......	......	......	......	......	
Chingleput	938,184	......	1,712	5,705	1,845	8,847	18,109	19·29	
North Arcot ...	2,015,278	5	4,474	22,495	2,106	15,178	44,258	21·96	
South Arcot... ...	1,755,817	108	2,606	11,526	1,538	9,255	25,033	14·25	
Tanjore	1,973,731	30	3,229	5,628	2,089	30,388	41,364	20·96	
Trichinopoly... ...	1,200,408	54	1,528	8,912	1,389	8,651	20,534	17·10	
Madura	2,266,615	2	2,258	6,490	1,381	4,692	14,823	6·54	
Tinnevelly	1,693,959	8	3,769	6,350	6,270	10,175	26,572	15·69	
Coimbatore ...	1,763,274	......	3,243	10,016	2,510	6,543	22,312	12·65	
Nilgiris	49,501	......	25	451	102	302	880	17·88	
Salem	1,966,995	1	7,882	23,243	1,951	12,817	45,394	23·08	
South Canara ...	938,362	29	537	4,062	2,602	6,374	13,604	14·49	
Malabar	2,261,250	31	4,528	12,678	3,503	14,429	35,169	15·55	
Total...	29,639,124	6,675	48,921	225,414	34,657	190,200	505,867	17·07	

8. Prices of Agricultural Produce.—The prices of food grains in Fusly 1282, compared with those of Fusly 1281 have risen in some Districts and fallen in others, the result on the whole being a slight increase as will be seen from the following statement. In Ganjam and Vizagapatam the prices which were unusually high in Fusly 1281, in consequence of famine in those Districts, have fallen to their normal condition owing to the favourable season of Fusly 1282, except in the case of horse-gram, the price of which rose throughout almost all the Presidency owing to the damage done to the crops by the heavy rains. The variations

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in the other Districts are trifling, and are due chiefly to the character of their harvests in Fusly 1281 and Fusly 1282:—

Grains.	Average price per Madras Garce for ten years, Fuslies 1272 to 1281.	Fusly 1281.	Fusly 1282.	Increase or decrease in Fusly 1282 as compared with the average.	Per cent-age of Columns 2 and 5.	Increase or decrease in Fusly 1282 as compared with Fusly 1281.	Per cent-age of Columns 3 and 7.
1	2	3	4	5	6	7	8
	RS.	RS.	RS.	RS.	RS.	RS.	RS.
First sort Paddy, per Garce...	187	144	149	— 38	— 20	+ 5	+ 3
Second do. do. ...	169	130	135	— 34	— 20	+ 5	+ 4
Cholum	219	159	168	— 51	— 23	+ 9	+ 6
Cumboo	199	151	150	— 49	— 25	— 1	— 1
Raggy	200	135	146	— 54	— 27	+ 11	+ 8
Horse-gram	246	196	221	— 25	— 10	+ 25	+ 12

9. The subjoined statement shows the effect of market prices with reference to the commutation rates in the Districts which have been recently settled. It is satisfactory to observe that the commutation rates are far below the ruling prices, except in the case of varagoo in the District of Salem:—

Grains.	Godavery.		Kistna.		South Arcot.		Trichinopoly.		Kurnool.		Salem.	
	Commutation price per Garce.	Market price during the Fusly.	Commutation price per Garce.	Market price during the Fusly.	Commutation price per Garce.	Market price during the Fusly.	Commutation price per Garce.	Market price during the Fusly.	Commutation price per Garce.	Market price during the Fusly.	Commutation price per Garce.	Market price during the Fusly.
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Paddy, 1st and 2nd sort	72	117	90	165	72	119	67	133	110	185	100	135
Cholum	84	153	95	235	117	150	100	135	105	169	100	139
Cumboo	60	124	70	188	93	140	83	130	......	164	100	127
Raggy	66	129	......	170	93	130	83	124	......	149	100	114
Varagoo	......	......	......	......	52	89	50	100	60	123	100	74

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10. A statement showing the prices of second sort paddy in each of the Districts is given as usual.

Districts.	Price per Garce.								
	Average of five years from Fuslies 1266 to 1270.	Average of five years from Fuslies 1271 to 1275.	Average of five years from Fuslies 1276 to 1280.	Fusly 1281.	Fusly 1282.	Increase or decrease as compared with Column 2.	Increase or decrease as compared with Column 3.	Increase or decrease as compared with Column 4.	Increase or decrease as compared with Column 5.
1	2	3	4	5	6	7	8	9	10
	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.	RS.
Ganjam ...	77	118	114	117	87	+ 10	— 26	— 27	— 30
Vizagapatam ...	93	138	126	161	133	+ 40	— 5	+ 7	— 28
Godavery ...	86	131	113	117	113	+ 27	— 18	......	— 4
Kistna ...	107	165	153	147	162	+ 55	— 3	+ 9	+ 15
Nellore ...	118	166	167	108	124	+ 6	— 42	— 43	+ 16
Cuddapah ...	143	209	212	140	148	+ 5	— 61	— 64	+ 8
Bellary ...	125	198	191	141	137	+ 12	— 61	— 54	— 4
Kurnool ...	131	201	197	157	178	+ 47	— 23	— 19	+ 21
Madras ...	......	......	......	110	116	+ 116	+ 116	+ 116	+ 6
Chingleput ...	128	165	185	107	115	— 3	— 50	— 70	+ 8
North Arcot ...	119	160	168	100	105	— 14	— 55	— 63	— 5
South Arcot ...	123	151	158	101	114	— 9	— 37	— 44	+ 13
Tanjore ...	119	151	156	123	125	+ 6	— 26	— 31	+ 2
Trichinopoly ...	138	173	181	115	125	— 13	— 48	— 56	+ 10
Madura ...	149	198	213	150	141	— 8	— 57	— 68	— 9
Tinnevelly ...	154	205	204	165	179	+ 25	— 26	— 25	+ 14
Coimbatore ...	171	204	220	142	148	— 23	— 56	— 78	+ 6
Nilgiris ...	......	......	......	...	...	......	......	......	......
Salem ...	145	168	178	112	126	— 19	— 42	— 52	+ 14
South Canara ...	134	161	158	132	147	— 13	— 14	— 11	+ 15
Malabar ...	158	193	192	155	168	+ 10	— 25	— 24	+ 13

(To be continued.)

Rules for Distribution of Water from Madras Irrigation and Canal Company's Canal.

Proceedings of the Madras Government, Revenue Department, 3rd *July* 1874.

Read the following Proceedings of the Board of Revenue, dated 6th May 1874, No. 1,050 :—

Read again G. O., dated 2nd July 1873, No. 7, Revenue Department, recorded in Board's Proceedings, dated 31st July 1873, Miscellaneous No. 4,792.

Read also the following Proceedings of the Madras Government, dated 17th March 1874, No. 354, Revenue Department :—

Abstract.—*Revised Rules for the distribution of Water from Madras Irrigation and Canal Company's Canal.*—Refers to Revenue Board, for early report, papers regarding—.

Most of the subjects referred to the Board for report in the first of these orders are settled in the rules which are dealt with in the second, but there is one point on which they think it right to express their views fully.

In paragraph 6 of the Memorandum by the Chief Engineer for Irrigation, recorded with G. O., dated 18th June 1873, No. 1,595, Public Works Department, he suggests that inducements should be offered to the ryots holding land commanded by the canal to convert that land into paddy fields; that water should be given for a limited time free of charge or at

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a reduced rate both to land already irrigated and to land where irrigation is commenced; and that a few labourers might be brought from one of the neighbouring deltas or from irrigated parts of Kurnool and Cuddapah to show the people how to prepare their land for *wet* cultivation.

2. The water-rate at first was settled at Rupees 4, but it was raised in 1866 to Rupees 6, and certain crops (such as sugar-cane) are charged Rupees 12, though it is admitted that water cannot be supplied to them (except under tanks) for double the time that it is supplied to paddy, or for a whole year.

G. O., dated 1st June 1866, No. 1,348.
G. O., dated 5th November 1866, No. 2,989.
G. O., dated 14th June 1867, No. 1,343.

3. The Board are decidedly of opinion that though these rates may not be too high for established cultivation, they are so high as to discourage ryots from trying the somewhat risky experiment of turning their cholum land into paddy land, &c., and that it would be advantageous not only to Government and the people, but also to the financial interests of the Company, if the Rupees 6 rate were reduced to Rupees 4, and the other rates in proportion. If this is done, the Board consider that there will be a fairer prospect of success like that of the Godavery and Kistna canals. Of course, the reduction cannot take place unless the Company consent to it. No. VI of the proposed rules makes alterations in the rates which are all in the right direction, but which seem to the Board to be insufficient.

Clauses 13 and 14 of the contract of 1863.

4. The Board do not think that anything would be gained by sending farmers of wet land to instruct the ryots of the canal villages.

5. The rules will be noticed in order.

Rule I.—Agent to inform the Collectors before the 1st April, what villages and parts of villages he is prepared to irrigate, &c.—This rule is new, but good.

Rule II.—Water not to be taken without a written application made by the ryot through the canal officers to the Curnum.—The corresponding rules hitherto in force provide that ryots shall tell the Collector what they want, and that the Collector shall ask the Company for the water. Subsequently, on the ground that this system was too slow and complicated, it was proposed by the Company's Agent that the ryot should tell the Curnum what he wanted, and that the Curnum should give him a filled-in form of application to take to the canal officers. Government remarked "the cardinal objection to the scheme is that it tends to make the application for water a transaction between the Company and the ryot instead of between the Company and Government." * * * "The objection above adverted to would alone be sufficient to condemn the proposal." This principle was strongly approved by the Secretary of State, but it is contravened by the proposed Rule II. It is true that the rule is worded so as to make the application an application to the Curnum, but the ryot is to give it to the canal officer, and it will, therefore, be practically an application to the canal officer.

G. O., dated 5th October 1864, No. 1,830.
G. O., dated 8th April 1869, No. 959.
G. O., dated 26th August 1869, No. 2427.

It must accordingly be considered whether the principle laid down so decidedly in 1869 should now be abandoned. The Board are of opinion that it should. From the first there have been complaints of the great remissness of Curnums in recording and transmitting applications for water. As the Chief Engineer for Irrigation remarks "the Curnums are clearly not to be relied upon to record applications or to facilitate the preliminaries which must precede the supply of water to the lands * * * consequently for the future it is proposed that all applications for water shall be made through the canal officers who will then know what water is wanted, and besides this there will be evidence of the number and date of applications forwarded to the Curnums for disposal." It seems to the Board that an unnecessary degree of importance has been attached to contact between the ryot and the Company at the time water is applied for. There must be contact of the same sort when the field channel is made, and the sluices are opened. All that is necessary is, that in the matter of payment for water supplied for irrigation, the Company shall have nothing whatever to do with the ryots.

Assuming that the term "canal officers" is sufficiently definite and that they are dispersed so that no ryot will have to take his application to any great distance, the Board approve of this rule.

Rule III.—Applications to be for whole fields or for not less than 2 acre portions of 4 acre fields.—It is necessary to define the word "fields" more clearly. From the first there has been a difference as to whether the "fields" recognized by the Company should be survey fields or revenue fields. The Board have more than once expressed an opinion that the fields should be revenue fields as representing actual facts, and allowing greater freedom of action to individual ryots with regard to taking water.

G. O., dated 15th March 1866, No. 662.

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It is possible that the word "fields" in the rule may mean revenue fields or, as it may otherwise be expressed, recorded sub-number of survey fields, but it should be altered so as to make this clear.

With regard to the extent of sub-division which may be allowed, the Board think the rule too stringent. No field of less than four acres may be sub-divided, and no sub-division of less than two acres is to be supplied with water. In other words, a ryot who happens to hold a one-acre field situated in a larger number is to be prohibited from trying the experiment of irrigation, and no ryot can turn his cholum land into paddy land without paying Rupees 12 in cash, besides incurring the risk of failure. In Government villages the water-rate rules which have been recently sanctioned, make the limit half an acre, or the field if the field is less than half an acre. Under the canal, the Board think that the sub-division of two-acre fields should be allowed, that the minimum extent of an irrigated sub-division should be one acre, and that it should be distinctly understood that if a field less than an acre in extent is irrigated, the charge shall be not on a whole acre but on the recorded extent of the field.

G. O., dated 25th March 1874, No. 384.

G. O., dated 16th May 1873, No. 492.

The rule provides that the sub-divisions shall be defined by stones, but the Board think this is unnecessary and undesirable as tending to produce the impression that if water is taken for a sub-division one year, it must be taken for the same extent in succeeding years.

Rule IV.—Penalty for taking water without applying for it.—Without reviewing the correspondence as to the penalty imposed by the rules now in force, the Board will simply observe that this rule seems to be a great improvement. There must be a penalty to induce ryots to apply for water before they take it, but the penalty is incurred so often, simply because ryots are in the habit of postponing their decision to take water till the last possible moment, that if the penalty is heavy it will discourage irrigation.

G. O., dated 15th March 1866, No. 662.

Board's Proceedings, dated 18th October 1869, No. 7,739.

Rule V.—The Company guarantee water in the canal till the 31st December, and in their tanks till the end of the season. After the 31st December, water from the canal will be supplied monthly at Rupee 1 a month.—This rule seems to be unobjectionable.

Rule VI.—Water-rates.

Clause 1.—Crops requiring a continuous supply, Rupees 6; double crops, Rupees 12.

Clause 2.—Second crops of the same sort under tanks, Rupees 6 and Rupees 12.

NOTE.—*A reduction allowed in the case of fields laid out in beds.*

The Board have already said that they believe these rates to be high enough to discourage irrigation very effectually, but they can only be reduced by the Company. The note is scarcely clear enough. The expression "fields laid out in beds" suggests a different idea to the Board from the explanation given by Colonel Mullins, viz., fields "levelled and bunded." It will be better if these words are used.

Clause 3.—Crops requiring frequent floodings, Rupees 4.—This is a decided improvement.

Clause 4.—Dry crops requiring occasional floodings, Rupees 2.—This also is a decided improvement.

Clause 5.—Crops requiring irrigation for more than six months to pay double rates, unless charged under Rule V for water supplied after the 31st December.—This seems to the Board not to be sufficiently clear. Under Clause 1 any of the crops styled *double* crops are to be liable to the double rate if they have a sufficient supply, and Government have decided that the *period* of supply is a matter of no importance. This clause taken together with Clause 1, would seem to imply that the double rate is to be charged in every case if the crop is under a canal tank, or if it is not so situated and irrigation commences before the 31st December, and that the rate of Rupee 1 a month is to be charged if the crop is not supplied by a canal tank and irrigation commences after the 31st December. If so, it seems to the Board to be too stringent, and at all events it should be expressed more clearly.

G. O., 14th June 1867, No. 1,343.

Clause 6.—For a series of crops not including rice raised up to the 31st December, Rupees 6.—This is a great improvement.

Clause 7.—For a similar series raised after the 31st December, Rupee 1 a month.—This is redundant, for Rule V contains the same provision. Moreover, if it is necessary to repeat Rule V with regard to a series of crops, it is necessary also to repeat it with regard to single crops.

Clause 8.—Crops supplied at first from the canal and afterwards from other sources. If crops of Clauses 1 and 2, Rupees 1½ a month; if of Clause 3, Rupee 1; and if of Clause 4, Rupee 1.—This is a case which is discussed in

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the papers recorded with G. O., dated 6th June 1873, No. 1,508. The only remark the Board have to make is, that the clause is intended to apply to crops supplied from the canal after other sources have failed, as well as from other sources after canal irrigation has ceased, and it should be altered accordingly.

Clause 9.—*Water supplied to Government tanks, Rupee* 1 *per* 1,000 *cubic yards.*—This is in accordance with G. O., dated 13th September 1873, No. 984, Revenue Department. In their Proceedings recorded with that order, the Board advised a condition that the total charge should not exceed the total revenue under the tank. This is not noticed in the order of Government, but in the Memorandum already mentioned. Messrs. Hope and Latham remark that the Company must be paid the price of the water they supply irrespective of any such condition, and that the Collector has the option of not applying for more water than can be paid for out of the revenue on land under the tank if he pleases. The Board concur.

Clause 10.—*A reduction of one-third to be made for baling.*—This is liberal.

Clause 11.—*Irrigation from channels carrying leakage water to be charged the same as irrigation direct from the canal.*—This is fair, if the supply is sufficient.

Clause 12.—*When the canal necessarily increases the supply of tanks, the Company are to charge for irrigation in excess of the maximum cultivated within five years at the ayacut rates for land in the ayacut, and at canal rates for land outside the ayacut.*—The Board presume that dry land irrigated and paying water-rate is to be taken into consideration in calculating the five years' average, and that, by the "ayacut rates," the Company is to charge, the difference between the consolidated wet assessment and the dry assessment of similar lands is meant. If so, the rule is fair.

Clause 13.—*When surplus canal-water passes into a water-course from which Government land has been irrigated, and irrigation is increased, the excess shall be liable to the canal water-rates "if regularly and intentionally supplied by the Company."*—Mr. Latham (though he has signed the rules) objects strongly to this last sentence, and the Board think it may be safely omitted. In a marginal note to the rule, he suggests that "or spring" should be added after water-course, but this seems to the Board to be inadmissible. If the influence of the canal on springs is taken into account, disputes will be endless. The rule is not very clear and might be recast with advantage.

Rule VII.—*Remissions may be granted by the Settling officers if a ryot, after applying for water, is unavoidably prevented from using it in whole or part.*—This is fair, but ryots should be permitted to withdraw their applications for water subject to subsequent approval by the settling officers.

Rule VIII.—*Remissions for failure of crops.*—This is fair.

Rule IX.—*Remissions for land unfit for wet cultivation.*—This is fair.

Rule X.—*Remission for exceptional causes.*—This is fair.

Rule XI.—*Claims to remission must be notified to the village or taluk authorities in time for the spot to be examined before the crop is removed, and the Curnum must inform the canal officer of the claim.*—The claim should always be notified to the taluk authorities as well as to the village authorities.

Rule XII to XV.—*Registration of applications by Curnums, despatch of registers to the taluk with a note of water taken without being applied for, despatch of abstracts from the Tahsildar to the Collector, register of measurements.*—These rules seem to be unobjectionable.

Rule XVI.—*Curnums' Registers to be open to inspection of the Company's officers and* vice versa. *Disputes to be reported to the Revenue Inspector.*—Disputes should be reported to the Tahsildar so that the Revenue Inspector may be ordered to make an inquiry if necessary.

Rule XVII.—*Register of Irrigation to be made after personal inspection by the Curnum and Reddy. Damage to be reported to the nearest Company's Overseer or Engineer and the Revenue Inspector of the range who should examine the spot together, &c.*—The Board think the damage should be reported to the Tahsildar, and the Tahsildar should order the Revenue Inspector to make the inquiry. Revenue Inspectors are a most important link in the chain of Revenue Administration, and this link which is weak already will be made weaker still if Revenue Inspectors, instead of looking solely to the Tahsildar for instructions, are placed at the beck and call of Curnums and Canal Overseers.

Rule XVIII.—*Curnum's annual water-rate account.*—The Board think this account should enumerate the pieces of irrigated land said to be unfit for *wet* cultivation, which form the subject of Rule IX.

Rule XIX.—*The Collector and the Manager of the Canal, or Deputies from each, to act together as Settling officers. Disputes may be referred to arbitrators who will choose an umpire.*—This rule is very similar to the Rule VI now in force.

Rule XX.—*Notice of the settlement to be given to the villagers.*—This is good.

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Rule XXI.—The Company to pay the Curnum 6 Pies in the Rupee of the adjusted gross demand.—The grant of remuneration is very desirable, but the Board agree with Mr. Latham that the settling officers should have discretion, and think they should be allowed either to reduce the amount or to give it in whole or part to any one who may have been a substitute for the Curnum during a part of the year or to the Reddy.

Rule XXII.—Part of the rules to be published in every village.—This is a good rule.

Order thereon, 3rd July 1874, No. 830.

His Excellency the Governor in Council proceeds to notice the rules submitted with the foregoing Proceedings in their order. The rules themselves, as finally sanctioned, are printed below, the alterations made in them by Government being distinguished by italics.

2. *Rule I.*—An addition is made to this rule which, by saving time and advertising the ryots, will enable them to make their arrangements early.

3. *Rule II.*—The Government are not prepared to abandon the principle that the Company sell to *them* and not to individual ryots. This was laid down by the Secretary of State, and should be strictly adhered to. The propriety of awarding a percentage on the revenue to the village officer having been conceded, there is sufficient reason to anticipate proper and interested attention being paid by the Curnums to this duty. Canal officers can know nothing of the occupation, boundaries, &c., of the land, and complications and misrepresentations will arise if their interposition is permitted. The rule will, therefore, provide that the application should be made, in the first instance, to the village Curnum, who will forward copies to the Canal officer and Tahsildar. This will not prevent Irrigation officers, under special circumstances, receiving and transmitting the application to the Curnum.

4. Form A. in which the application is to be recorded should be, as provided, a book with entries in triplicate. All the headings should be printed in diglott (Telugu and English). The Curnum should retain the counterfoil and transmit the second portion to the Canal officer and the third to the Tahsildar.

5. The Board will be good enough to revise the Form. In the specimen sent, the centre portion does not accurately correspond with the others, nor does it sufficiently show the *kind* of irrigation which is wanted. In Form B, which the Curnum has to keep under Rule XII, there is a column containing this information; but as this has to be filled up with reference to Form A, some addition to the latter seems necessary.

6. *Rule III.*—The Government approve of the definition of fields proposed by the Board. It must be clearly understood that irrigation for an entire holding or registered number, however small, must be supplied at a ratable charge. Sub-divisions should be made by Revenue-officers. There does not seem any necessity to incur the expense of setting up stones to mark such sub-divisions, which will be tentative subject to extension.

7. *Rule IV.*—Is approved. It does not appear what arrangement is to be made for recording instances of breach of Rule III. The Board will report on this point.

8. *Rule V.*—Is unobjectionable.

9. *Rule VI.*—The Governor in Council fully agrees with the Board that the charges are generally too high. The Board's observations as to their reduction will be brought under the consideration of the Company.

10. The classification of products for purposes of taxation to (1) canal and (2) canal-tank revenue must have the deliberate sanction of Government, and the term "etcetera" must, therefore, be struck out of clauses 2, 3, and 4.

11. Sugar-cane, betel-leaves, cocoanuts, and plaintains, may be classed as proposed and tentatively charged accordingly, provided that fractions of acres are admitted.

12. The cowle-system is an improvement. The words "fields levelled and bunded" will be substituted as proposed by the Board for "fields laid out in beds."

13. The five products mentioned in Clause 3 are unobjectionable, but none others can be added without the orders of Government.

14. Raggy may be added to cholum in Clause 4. The Board will report whether any other species may be entered. In regard to clauses (1), (3), and (4), it should be understood that in cases requiring the orders of Government the Collector and Manager may classify unclassified crops provisionally.

15. The addition suggested by the Board has been made in Clause 8.

16. Clause 9 is sanctioned as a tentative measure. The charge seems a heavy one, and may often prove prohibitive, because the loss by evaporation, leakage, &c., will fall on the State. Government would wish this clause re-considered by the different officers concerned and a further report made.

17. The Government accept Clauses 11 and 13 (entered in the revised rules as Clauses 11 and 12) on the understanding that they are

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meant to apply to water *directly* supplied by the Company, *i.e.*, conveyed by them to the land.

18. Clause 12 will now stand as Clause 13. It has been altered in accordance with the Board's remarks.

19. *Rule VII.*—The addition proposed by the Board is approved.

20. *Rule VIII.*—An addition has been made to this rule to provide for any shortcoming on the part of the Canal Administration. The last clause has also been struck out. If the application has been accepted and ratified by the action of the Canal Administration, the reciprocal right applies. It is not reasonable to introduce an arbitrary fine and sanction a direct breach of contract.

21. *Rule IX.*—The ryots are entitled to remission on *all* ground unfit for wet cultivation. The rule has been altered accordingly.

22. *Rule X.*—The last clause has been struck out. This is provided for under rules as to settling officers.

23. *Rules XI—XVII.*—The Government do not think it necessary to make the Tahsildar the *necessary* channel of communication with his local Inspectors. Such would doubtless cause delay. The Revenue Inspectors should examine *proprio motu* or on petition and report to the Tahsildar for orders with full statements of facts.

24. No form has been prescribed under Rule XV for the registry of detailed measurements of areas applied for. It is not clear why this is necessary, unless where portions of a field are irrigated under Rule III. The fields in Cuddapah and Kurnool have all been surveyed and mapped, and in ordinary cases the extent of the field as given in the village register would be sufficient without any further measurement. It is desirable not to increase the Curnums' work unnecessarily.

25. The Register (Form C) referred to in Rule XVII does not contain the information required by the rule. It is headed " Register of measurements of portions of fields applied for either for irrigation or flooding under the canal," and the columns provide that a measurement should be made. The rule seems to require that a register should be kept of *all* land under irrigation. The Board will make such alteration as may appear necessary.

26. *Rule XVIII.*—The wording of the rule has been altered with reference to the Board's suggestion.

27. *Rule XIX.*—An addition has been made to this rule with reference to remarks on Rule X.

28. *Rule XXI.*—The wording of this rule does not preclude the exercise of discretion in the allotment of the amount or of a portion of it to such person as the Collector may determine on report of the settlement officers. The relations of the village officers to the Revenue authorities are not altered by these rules, and the Collector in case of proved neglect would substitute another man and make other needful arrangements on the strength of the remuneration to be assigned under this rule.

(True Extract.)

(Signed) C. G. MASTER,

Acting Secretary to Government.

Rules for the Distribution of Water from the Canal of the Madras Irrigation and Canal Company.

Rule I.—Before the 1st day of April in each year the Agent of the Company shall inform the Collectors of districts what portions of each village under the influence of the Canal he is prepared to irrigate during the ensuing irrigation season, and the Collectors shall have the above information duly posted up and publicly notified in each village concerned, through the Curnums, before the 1st day of May following: *the Canal Administration shall, at the same time, send a notice to the Curnum of each village in anticipation of the Collector's order.*

Rule II.—No water shall be taken from the canal for irrigation purposes without written application to the village Curnum, *copies of which are to be forwarded by him to the Canal officer and to the Tahsildar.*

Rule III.—Applications will be recorded for whole *revenue* fields *or recorded sub-numbers of survey fields,* however small they may be. Water will not be supplied *for areas of less than one acre, except where the entire field is of less extent.* Sub-divisions of fields when *necessary* will be made by the *Revenue authorities. The charge will be on the recorded extent of the field. This rule will be subject to relaxation under circumstances beyond the control of the ryots.*

Rule IV.—If water is taken without application, the cultivator will not be entitled to remission; and he will be required to pay a rate of 8 Annas an acre for the first offence, one Rupee an acre for the second offence in addition to the regular rate, and thereafter such an addition not exceeding double the rate as may be considered requisite by the settling officers.

Rule V.—The Company do not, except under their tanks, guarantee a supply of water beyond the 31st December; but, so far as water may be available in the Toomboodra or other streams feeding the canal, it will be supplied at the

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rate of one Rupee a-month so long as the supply lasts until the annual closing of the canal which will be notified not later than the 1st December.

Rule VI.—The full charge for water on application shall be as follows :—

		Rate per Acre. RS.
1st Class.	Clause (1). Crops* requiring continuous supply, 1st crop	6
	Clause (2). Do., 2nd crop (under tanks) ...	6

NOTE.—In future years, wet crop of the descriptions referred to in Clauses 1 and 2 when raised on fields *levelled and bunded* will be charged 3 Rupees an acre for the first year; Rupees 4 for the second year; Rupees 5 for the third year, and Rupees 6 for the fourth and subsequent years on the same fields. Wet crop irrigated in an open field without level beds and bunds will always be charged the full rate of 6 Rupees.

	Rate per Acre. RS.
Clause (3). Crops† requiring frequent floodings	4
Clause (4). Dry‡ crops requiring occasional floodings	2

NOTE.—"Crop" includes one or two or more crops sown together in intermediate rows at the same time.

Clause (5).—Double crops or those requiring irrigation for more than six months to pay double the rates specified for their class, unless supplied after 31st December, at the monthly rate.

Clause (6).—For a series of any crops, rice excepted, raised from the beginning of the season up to 31st December, Rupees 6.

Clause (7).—For a series of any crops, rice excepted, raised from 1st of January to the closing of the canal, per month, Rupees 1.

Clause (8).—If water is not supplied for the whole time the crop is on the ground, and the crop is matured from other sources, the charge on crops of the 1st class shall be at the rate of 1½ Rupees, and on crops of the 2nd class at the rate of 1 Rupee per month of canal irrigation. *This clause is intended to apply to crops supplied from the canal after other sources have failed as well as from other sources after the canal irrigation has ceased.*

Clause (9).—For water supplied to a tank for storage for the purposes of irrigation, the rate shall be 1 Rupee for (1,000) one thousand cubic yards, the quantity being measured at the supplying sluice. Water shall be supplied as above on the requisition of the Collector.

Clause (10).—If water is baled, the charge shall be two-thirds of the full rate.

Clause (11).—Irrigation by canal leakage water conveyed to lands for purposes of cultivation within the limits commanded by the Company's distribution channels will be charged the same rates as are laid down for similar cultivation supplied directly from the Canal channels. Leakage into fields otherwise called sub-soil leakage will not be charged for.

Clause (12).—No charge shall be made for water passed as surplus into any water-course or natural channel, from the natural supply of which a garden wet crop has been in time past or usually been irrigated. The position and extent of lands so irrigated shall be ascertained and recorded; and areas in excess of this extent shall be liable to the canal water-rate if regularly and intentionally supplied by the Company.

Clause (13).—No charge shall be made on *any* land cultivated within the preceding five years under tanks, the supply or distribution of which is necessarily affected by the canal. Additional cultivation under Government works of irrigation due to the influx of canal water shall, if such extension be within the Company's scheme of irrigation, be charged for at the same rates as the other cultivation within the ayacut, *the difference between the consolidated wet assessment and the dry assessment being credited to the Company. The ordinary* canal rates *will be charged* beyond that limit.

Rule VII.—As a general rule, applicants will be bound to pay for all the land applied for. In special cases, where from sudden illness or loss of cattle or other causes beyond his control, the ryot is prevented from cultivating the land, he may, at the discretion of the settling officers, be allowed to withdraw his application. If cultivation has been commenced, he may be charged only for the water used. *Ryots should be permitted to withdraw their applications for water subject to subsequent approval by the settling officers.*

Rule VIII.—Remission of water-rate, either wholly or in part, will be granted for failure of crops in cases where that failure is caused by excess or deficiency of water due to defect of works *and shortcomings on the part of the Canal Administration*, and not to neglect on the part of the ryots.

Rule IX.—Remissions will be granted at the discretion of the settling officers for rocky

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* 1. Rice. 4. Cocoanuts (double.)
2. Sugar-cane (double.) 5. Plantains (do.)
3. Betel-leaves (do.)

† Usually irrigated in beds.

1. Raggy. 4. Sweet Potatoes.
2. Onions. 5. Tobacco.
3. Chillies.

‡ 1. Cholum, 2. Raggy.

ground or land otherwise unfit for wet cultivation.

Rule X.—In exceptional cases, such as failure due to "Choudu," excessive rains or other cause beyond the Company's or ryot's controls a similar indulgence may be granted at the discretion of the settling officers.

Rule XI.—No claim to remission for any case of loss or damage of crop shall be admitted, unless written timely notice is given to the village or taluk authorities, so as to secure examination on the spot before the damaged crop is removed. The Curnum will, at the same time, give prompt intimation of the claim to the Company's Overseer or the Resident Engineer.

Rule XII.—All applications shall be recorded by the Curnum, if possible, on the same day they are received in a register.*

* Form B.

Rule XIII.—The register of applications shall be closed on the 28th of the month, and an extract thereof despatched to the taluk cutcherry, so as to reach it on the first of the following month. All cultivation without application should be shown at the foot of the register with the necessary remarks.

Rule XIV.—The Tahsildar or, in his absence, the Taluk Sheristadar shall prepare an abstract thereof, and despatch it so as to reach the Collector on or before the 5th, who will forward it on to the Company's Chief Engineer.

Rule XV.—The Curnum shall further keep a book showing the detailed measurement of the area applied for. The Revenue Inspector should examine, during his visit to the village, the accuracy of the measurements thus recorded and make the necessary corrections in red ink.

Rule XVI.—The register of applications kept by Curnums shall be open for inspection to officers of the Company, who may enter any remarks they think proper or make extracts thereof. Similarly, the Curnums and other Revenue officers may inspect registers kept by the Company's Overseers and Surveyors. Where there is a difference of opinion between the Curnums and the Company's Overseers, either in regard to damage or irrigation, the same shall be reported to the Revenue Inspector, in view to the necessary inquiry being held on the spot.

Rule XVII.—The Curnum and the Reddy shall go along the irrigation channels and inspect the cultivation as often as necessary and at least twice a-month, and enter the extent in the register* kept for the purpose with any necessary remarks regarding use of water without previous application, damage to crops, &c.; an immediate report of any damage shall be sent to the nearest Company's Overseer or Engineer and to the Revenue Inspector of the range. On receipt of this report, the Revenue Inspector shall at once visit the spot, together with the Company's Overseer if possible, and report the result of his inquiries to the Tahsilder. In more important cases, the Tahsildar or Sheristadar shall conduct the investigation in person.

* Form C.

Rule XVIII.—The Curnum shall, at the close of the season, prepare an account* showing the total land applied for, the portion irrigated, and any loss of produce from *causes indicated in Rules VIII, IX, and X*, and submit the same to the taluk cutcherry not later than the 1st of April in each year.

* Forms D. & D 1.

Rule XIX.—The settling officers shall consist of the Collector of the district and the Manager of the canal, or of an officer deputed by either to act for him. They shall decide all facts pertinent to claims made by ryots for remission of water-rate due to damage done by the canal water or works; or to appeals against the rates or measurements; and shall be competent to decide on the correct amount of water-rate chargeable and on the remission thereon, and also to arbitrate, if so desired by the claimant, on all cases of claims for damage made against the canal. It shall be open to either the Government or the Company, as represented by their local officers, to claim a reference of the question to arbitration, in which case the Collector and the Company's chief local officer shall each nominate one arbitrator, and the two nominees shall elect an umpire. The decision of the arbitrators shall be final. *Where settling officers are deputies, their proceedings are subject to the confirmation of the Collector and the Manager of the canal.*

Rule XX.—Notice of the time and place of settlement of each village shall be tom-tomed through the village at least ten days before the date fixed.

Rule XXI.—With a view to facilitate the registration of applications for water and the subsequent transaction of the Company's business 6 Pies in the Rupee of the adjusted gross demand will be paid by the Company to the village Curnum in remuneration for his trouble.

Rule XXII.—A table of water-rates and remissions in accordance with the above rules in English and Telugu and a printed copy of Rules 2 to 11 and 20 to 21 in Telugu shall be posted by the Company in every village and hamlet whose land is or will be affected by irrigation.

(Signed) C. G. MASTER,
Acting Secretary to Government.

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MISCELLANEOUS.

TOBACCO—ITS HISTORY AND CULTIVATION.*

I.—HISTORY.

It has been supposed by some that the use of tobacco was familiar to the Asiatics long before the discovery of America. *There is no doubt that the plant was known, and its properties understood prior to that event.* Columbus and his followers, in 1492, saw smoking practised, for the first time, by the natives of Cuba, who rolled the tobacco, which grew wild in the heights of that Island, like a modern cigar; and they subsequently found that a similar practice existed on the Continent of America, but in different modes, some smoking pipes and others cigars. Some writers affirm that the plant was first discovered in the Mexican Province of Yucatan, in A.D. 1520, where it was called *petum*. Both the Mexicans and Peruvians practised chewing the leaf and snuff-taking. Tobacco was introduced into Europe in 1560 by Francisco Hernandez, a Spanish Physician, who is said to have brought the seeds to Spain. At the same time it was made known in Italy and France. Jean Nicot, Lord of Villemain, and Master of Requests of the French king's household, was sent to the Portuguese Court in 1559, as agent of Francis II. When Nicot returned to France, in 1561, he presented the Queen, Catherine-de-Medicis, with some plants, which he grew from seed purchased at Lisbon from a Flemish merchant, who had obtained it from Florida. Hence it was called *Herbe-de-la-Reine* and *Herba-Mediciana;* and from Nicot it subsequently received the generic term *Nicotiana.* It seems to have been first introduced into England, about A.D. 1586, by a Captain Lane, who, with some others, had been left by Raleigh to colonize Virginia, but who, their provisions having failed, and the Indians proving hostile to them, returned home in nine months. During their residence in Virginia they learnt the use of tobacco from the Indians, and, on their return, taught their companions the method of using it. Raleigh and some young men of fashion speedily adopted the habit of smoking, and it gradually spread in England. The tobacco plant was introduced into India in A.D. 1605, during the reign of Akber.

Various attempts were made to put down the practice of smoking in Europe. Heavy imposts were levied on smokers, the use of tobacco was condemned in pamphlets, and bodily punishment was even resorted to, but all without success. Some Eastern potentates endeavoured to check the habit of snuffing by cutting off the noses of those who indulged in it. The specific name of tobacco is by some considered to be derived from the Indian word *tabac*, by which the Caribbees recognized the pipe in which the leaves were smoked. In Tamil tobacco is called *Poga Yellei;** or smoke leaf. A cigar is known as *churuttu*,† the word cigar being corrupted from the Spanish word *Cigarris*, signifying a small tubular roll used for smoking. Snuff is from the Dutch *Snuffen*, and the German *Schnuffen*, meaning to draw in, or inhale pulverised tobacco.‡ Tobacco, in Mexican, *Yell*, is derived from a Haytian word.§

II.—BOTANICAL CHARACTER.

Tobacco belongs to the natural order *Atropaceæ*, which may be considered a section of *Solanaceæ*. According to the Linnean system, *Pentandria Monogynia.* Habitat: Central America; now cultivated in most parts of the world.

Generic Characters.—Calyx, urceolate, five-cleft; corolla much longer than the calyx, funnel-shaped, five-cleft; regular-stamens: five stigmata: emarginate; capsule, two-valved.

Special Characters.—Leaves, sessile, oblong, lanceolate, accuminate, the lower ones decurrent; throat of the corolla, inflate, ventricose; limb with accuminated segments; a viscid herb; root, branching, fibrous; stem, three to six feet high, erect, round, hairy, branching at the top; leaves, very large, pale-green, with glandular short hairs; bracts, linear, acute; flowers, panicled on the end of the stem and branches; calyx, hairy; corolla, rose-colored; ovarium, ovate; style, long and slender; stigma, capitate, cloven; capsule, two-celled, opening crosswise at the top, loculicidal; seeds, numerous, small somewhat reniform, brown.

III.—VARIETIES OF THE GENUS NICOTIANA.

This genus contains about forty species, most of which yield tobacco, and many are cultivated in gardens in Europe. The species of Nicotiana are most of them herbs, rarely under shrubs, and generally clothed with clammy hairs or down. The flowers are terminal, racemose or panicled, and of a white, green, or purplish color. The calyx is five-cleft, permanent; corolla, funnel, or salver-shaped; divisions, five-plicate and spreading; stamens, five-anthers, dehiscing lengthwise; stigma, clavate; capsule, two-celled, two-valved; valves, bipartite; seeds, minute, numerous.

1. *Nicotiana Tabacum, Linnæus.*—Common Virginian, or sweet scented tobacco, is an herbaceous plant with accuminated, oblong, lanceolate, sessile leaves, lower ones decurrent; throat of corolla, inflated; segments of

* By Surgeon-Major JOHN SHORTT, M.D., F.L.S., &c., Superintendent-General, Vaccination, Madras.

* In Hindoostani and Persian, *Tambaku;* in Telugu, *Pogaku*.

† *Churuttu* in Tamil means a roll or curl, and the English word Cheroot is probably a corruption of it.

‡ *Vide* Cassell's Botany; Pereira's Materia Medica; Ainslie's Materia Medica; Royle's Reproductive Resources of India.

§ *Vide* Prescott's Conquest of Mexico, Vol. I., Page 86

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the limb, pointed. This is a native of several parts of America. The stem rises to the height of from four to six feet, and bears pink flowers. There are three chief varieties of this, known in America under the name of Orinoco, broad-leaved, and narrow-leaved. *Lindley* enumerates eight varieties of *Nicotiana Tabacum*. It is the species most commonly used in the manufacture of tobacco and cigars, and is also extensively cultivated in flower-gardens as an ornament. It is said by some authorities that this variety was introduced into Europe by Sir Francis Drake. Shag, Returns, and other cut kinds are prepared from it, and named after the localities in which they are grown.

2. *Nicotiana Macrophylla.*—Orinoco tobacco—is an herbaceous plant with oval acute leaves clasping the stem; throat of corolla, inflated; segments, short, pointed. This plant is a native of America and is taller than most of the varieties, the stem often rising to the height of seven feet. It is an ornamental annual, bearing broad leaves and pink flowers. The milder Havanah cigars are said to be made from its leaves.

3. *Nicotiana Rustica.*—This is the species usually cultivated in Europe. It is known as English tobacco from being the first tobacco introduced into England for propagation. The much esteemed tobacco of Salonica and Latakia is manufactured from this plant, and is known in England as Turkish tobacco. This species produces white flowers, and seldom attains a greater height than three feet. The tobacco is of milder flavour, and is used as delicate cut tobacco, and cigars. The Latakia, Syrian, and Turkish tobacco are prepared from this variety. It is a native of America, and is found growing wild in other countries, and popularly recognized as English tobacco.

4. *Nicotiana Persica—Lindley*—is an herbaceous plant, clothed with clammy down, with the leaves of the root oblong, those of the stem accuminate and sessile; corolla, salver-shaped, with a long tube and rather unequal segments. This plant is a native of Persia, and produces the famous Shiraz tobacco.

5. *Nicotiana Fruticosa*, or, shrubby tobacco—an ornamental ever-green shrub bearing pink blossoms, it grows to the height of three feet, is a native of Persia and China, and is used for delicate kinds of smoking; it is used for cigars, but not medicinally.

6. *Nicotiana Undulata*, sweet-scented, or New Holland tobacco—a green house-perennial, native of New South Wales, with white flowers, and is two feet high.

7. *Nicotiana Paniculata*, or panicled tobacco—an annual plant bearing greenish-yellow flowers, a native of Peru, and rises to the height of three feet.

8. *Nicotiana Glutinosa*, or, clammy-leaved tobacco—also an annual plant, a native of Peru, growing to the height of four feet, with bright scarlet flowers.

9. *Nicotiana Plumbaginifolia.*—Curl-leaved tobacco, an ornamental deciduous, annual, a native of America; with white blossoms, and rises to the height of two feet.

10. *Nicotiana Pusilla*, or, primrose-leaved tobacco—an ornamental deciduous, biennial, with white flowers, a native of Vera Cruz, rising to three feet.

11. *Nicotiana Quadrivalvis*, four-valved, or, Missouri tobacco—an ornamental annual, a native of North America, with white blossoms, rising only two feet high.

12. *Nicotiana Nana*, or, Rocky-mountain tobacco—a curious green house-annual, a native of North America, with white blossoms, rising only three inches high.

13. *Nicotiana Langsdoriffii*, or, Langsdorff's tobacco—an ornamental annual with greenish-yellow flowers, a native of Chili, reaching five feet high.

14. *Nicotiana Cerinthoides*, or, honeywort tobacco—an ornamental annual, with greenish-yellow flowers; native country unknown.

15. *Nicotiana Repanda*, Havana tobacco—an annual, with white flowers, a native of Cuba, rising two feet high. A few species, natives of the Province of Buenos Ayres, may be particularized.

16. *N. Canariensis*—having white flowers.
17. *N. Glauca*—yellowish-green flowers.
18. *N. Longiflora*—white flowers.
19. *N. Viscosa*—pink flowers.*

IV.—Cultivation of Tobacco in America.

A.—Virginia.—The success of the growth of this product depends in a great measure on soil, situation, climate, and season. New ground or virgin soil produces the finest description. Plant or nursery beds should be formed, if possible, in moist situations, and should consist of pure vegetable mould; the soil should be well opened out, the clods crushed and weeds exterminated. In some places the soil is burned by the firing of brush-wood, or refuse-grass.

The seeds, after the beds have been prepared as above, are scattered pretty thickly, and sometimes raked in. The sowing generally takes place in the month of February; and, in from three to four months, the plants are ready for transplantation, when they are removed to the field and placed on ridges at a distance of from eight to twelve inches apart; and, in some parts, where the soil is rich, they are placed from three to four feet apart. The plants require but little attention until they begin to throw out suckers, which must be carefully removed by the hand as they make their appearance; the weeds must be completely removed, and the plants must receive the same attention in this

* Balfour's Cyclopædia.

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respect as a well-kept garden. The planter must be guided, as to the number of leaves to be left on each plant, by the strength and richness of the soil; from six to sixteen may be left, and the tops are pinched away. The plants are very liable to attack from caterpillars. Consequently, great attention will be necessary to free them from these pests. The leaves now continue to progress towards maturity, and they are known to be ripe by the crackling sound given by the lamina on being broken, as well as by its thickness. The plants are now ready for the sickle, and, as they are cut, they are placed flat upon stakes and exposed to the sun for a few days till they wither and change color, taking a yellowish or brownish hue, and they are at the same time protected from heavy rains and dew. From this they are removed into log-houses and suspended from the roof, when the process of curing goes on.*

B.—West Indies.—The Island of Cuba is celebrated all over the world for its tobacco culture, from which the much prized Havanah cigars are manufactured. The natural richness of its soil and tropical climate make the Island favourable to the growth of tobacco, and the cultivation is carried on in very much the same manner as in other localities, the plants requiring the greatest care during their infancy. The particular kind cultivated on the Island is the *Nicotiana Repanda;* the plants when transplanted are placed in rows three feet apart, but this is not done until they have attained a height of from six to eight inches. When they have established themselves in their new localities, the lower leaves are removed and the plant stopped at the height of three or four feet, from eight to twelve leaves being left on each stem. This is done in order to strengthen the plant, and add to the vigor and luxuriance of the leaves, from which it is intended to manufacture tobacco. As the plant progresses in height and vigor, the vigilance of the planter is continually required to remove the side-shoots and suckers, and to destroy the caterpillars which infest the plant from its infancy. As the leaves approach maturity, they become somewhat paler in color, rich in aroma, and feel rough when handled; at this time they are cut down; this is generally done in the morning after sunrise, and the weather during the tobacco harvest should be clear and fine. The stalks are allowed to be on the field till after mid-day to liberate their natural or acquired moisture, when they are stored; and, on the following day, the leaves are plucked off the stalks and strung up in rows to dry.

C.—Philippine Islands.—The soil is prepared and marked out into convenient sized beds, which are generally from five to six feet wide, and from eight to twelve feet long. The soil is well opened up, the clods are crushed, and the seed is sprinkled over with ashes to prevent crowding, which is likely to happen from their minuteness. The seedlings show themselves in from five to seven days, when they require to be carefully weeded to prevent the plants from being choked.

The seeds should not be sown during the rains, as from their small size they are sure to suffer from heavy showers; and consequently, the nursery beds are frequently protected on such occasions by a low shed, which keeps off the rain, and allows of ventilation until from three to five leaves are developed. In two months from the period of sowing the seedlings will be ready for transplanting, but this will depend very much on the reproductive powers of the soil. Sometimes the period of transplanting may be deferred without injury to a fortnight or three weeks later, when the plants will have become stronger and will have attained from eight to ten inches in height. Much attention is necessary to prepare the soil in the cultivation of tobacco. In Cagazan, where the best tobacco is produced, there are highlands and lowlands. Should the season be fair, excellent tobacco is produced on the highlands when transplanted; but the lowlands are generally preferred in consequence of the greater amount of moisture in the soil by percolation from the adjacent rivers, and this is sufficient to carry the plants forward in the absence of rain; but should the moisture and rain fail, the plant is dwarfed. The land having been well cleansed and prepared, furrows about three feet apart and from ten to twelve inches deep are made. The plants are placed in them at a distance of three feet from each other, so that each plant occupies a square yard. When first planted out, the roots should be protected from the sun till they have struck root afresh in the soil by being well covered with earth. From the moment of transplantation, the plants are liable to be infested with worms, and unless carefully searched for and destroyed, they will devour many of the leaves. Constant attention is necessary during the whole period of growth. At times the destruction effected by worms is so rapid that plants placed in the furrows on one day disappear on the next; thus the field may have to be planted over several times. When the plant has once rooted itself in its new situation, there is no fear of its destruction; but the leaves will now be attacked, so that the plantation will require daily attention, night and morning, during the period the plant is arriving at maturity, to save it from the ravages of the caterpillars. In fact, the planter's whole time will be occupied in weeding and freeing the plant from worms, and removing suckers as soon as they appear, to prevent the plant being weakened. Two months after transplantation the plants are

* Captain Basil Hall's Travels.

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topped, leaving on each from twelve to fourteen leaves, except in those intended for seed; for the seed from subsequent crops is not so good as that procured from the first. Four months after transplantation, the growth of the plant will be complete; and advantage must be taken of the seasons, so that the plants may have the benefit of rain during the first two months only, as rain is injurious to the tobacco as it approaches maturity; and very often, under these circumstances, the leaves become diseased and covered with white spots, which render the crop worthless. Whereas a shower of rain or two, when the leaves are thoroughly ripe, proves of advantage; for, although the leaves become discolored by yellow spots, these are considered indications that the tobacco was gathered in due time, and that it bears the stamp of being well seasoned. The whole crop is not gathered in at the same time, as the leaves do not ripen together; but the lower and older leaves ripen first, and the others follow successively. The ripening of the leaves is ascertained by the stalks beginning to assume a yellow color, when they should be gathered. After the tobacco has been gathered, the stem should be cut to within eighteen inches of the soil. From the "stool" left two, three, or more shoots will push out. As many of these as may be thought desirable should be left, and the others removed; those left form the second crop.*

(To be continued.)

CATTLE—INDIGENOUS BREEDS OF THE MADRAS PRESIDENCY.†

The Indian cattle forms one of Bovinæ, genus Bovidæ, order Ruminantia. The genus Bovidæ is divisible into three groups: 1, Bisontine or Bison; 2, the Taurine or Oxen; and 3, the Bubaline or Buffalo. Of these three groups, the Taurine, known as the Ox or Bull, is the most important to man, as, during its life, it contributes most materially to his wants, and, when dead, every part is converted to his use. The Indian Ox is termed scientifically *Bos Indicus*, or Indian *Zebu*, popularly the Brahmin Bull, and comprises several varieties, all of which are remarkable for having long pendulous ears and a fatty elevated hump on their withers, and are generally held sacred by the Hindoos, who consider it a sin to kill them, and pollution to partake of their flesh. The bull is worshipped under the name of *Nundee*, having formed the vehicle of their deity *Siva* during his peregrinations. While the Hindoo will starve to death alongside of a fat bull or cow, rather than consume its flesh, yet he feels no hesitation in freely partaking of the milk. Cattle in India comprise, in most districts, the wealth of the agriculturist or ryot; and they perform most of his agricultural operations, either with the plough or in draught, being used in carts or as pack bullocks, exporting the produce from one district to another; and they furnish him with animal food in the shape of milk and ghee; and the hide is made into leather, thongs, and water-buckets. The Indian ox is still met with wild in some parts of Southern India. The late Dr. Jerdon, in his work on the "Mammals of India," mentions his having shot one near Nellore in this Presidency in 1843. In 1848 I saw a fine cow that was shot by Lord David Kennedy, then Lieutenant in the 1st Light Cavalry, within thirty miles of Arcot. The flesh of this animal was rich and extremely well flavoured; and I have no doubt but there are animals of this description still to be met with wild.

The Indian cattle, like that of Europe, vary in most districts either as to size, form, symmetry, or as to the growth and length of their horns, according to the varying local peculiarities of climate, soil, and fodder, natural or artificial, all of which tend to influence the form, size, and character of the animal. The native, who lives on a meal of rice, and perhaps a few herbs to season the same with, expects that his cattle will, in like manner, pick up what they can in the way of pasture about the village or its adjacent lands, so that he never troubles himself to grow green food, or prepare dry fodder for his cattle: the same plant, that supplies him with grain, feeds also his cattle with the straw. In most towns and villages the cattle are driven out at all seasons to roam abroad, but they more frequently lick the dust and return home with the same empty stomach that they started with, to receive perhaps a few handfuls of straw, or rubbish just sufficient to sustain life. Perhaps it would be better that I should first describe the different breeds of cattle met with in Southern India, and point out the distinguishing features of each breed, and the circumstances to which each breed is best suited, and the use to which they can be turned, and then review the whole subject with suggestions as to their improvement for practical application.

Mysore.—The cattle of this district have justly been celebrated as draught cattle for their spirit and powers of endurance: they are active and quick in their paces, somewhat restive and fiery in disposition. The height of the Mysore bullock varies from 12 to 15 hands, with a good compact carcase; the horns are straight and long, extending from 2 to 3 feet in length, tapering and sharp-pointed, inclining upwards, slightly convex on the out and concave in the inner side, approaching each other at the tip. Countenance, sprightly; eyes, large, black, prominent, expressive, and full of fire; face, long and moderately narrow; muzzle, eye, and hoof, black; head, erect and well-carried on a moderately-sized and well-formed neck, rising

* Colonel Joseph-de-Hezeta.

† Prize Essay by Surgeon-Major John Shortt, M.D., F.L.S., &c., Superintendent-General, Vaccination, Madras—written for the late Sydapet Exhibition.

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over the withers into a well-shaped and fair-sized hump, giving grace and beauty to the animal; back, straight; tail, flat and well-set; chest, wide and deep; carcase, well-rounded and shaped with a small dewlap. The legs are clean, straight, well apart, and standing out, forming a good base for the support of the body; skin moderately fine and covered with short soft hair. The prevailing color consists of varying shades of grey, from dark to a very light grey or white. They are generally highspirited animals, and require kind and conciliating treatment to break them in. The nose-string is invariably used not only for bulls and bullocks, but for cows also—an unusual proceeding not generally met with in any other district as far as I am aware. The well known gun-carriage or karkhana bullocks come from this breed, which has been judiciously crossed with the Nellore, though latterly this crossing has, I think, been carried to some excess from the specimens I have seen.

The cows milk fairly, yielding from 3 to 6 quarts in the 24 hours. The value of a good cow ranges from 35 to 70 Rupees, whilst that of a first-class pair of bullocks from 200 to 250 and even 300 Rupees. Ordinary working bullocks fetch from 70 to 150 Rupees the pair.

Nellore.—The breed of cattle from this district has also been celebrated, not so much as draught bullocks, but as milch cows, for which purpose they have been greatly esteemed and fetch large prices. A good specimen of the Nellore breed is a huge animal, standing from 15 to over 17 hands in height, with a noble but heavy look: their powers of draught and spirit of endurance are great: they are generally docile and slow in their movements, and, from their noble form and short horns, they are readily recognized. The horns are short and stumpy, barely 3 to 6 inches in length, and never, unless in exceptional instances, exceed 12 inches, inclined outwards, tapering to a blunt point. Countenance, dull; eyes, large, prominent, and heavy-looking; face, short, with greater breadth of forehead and muzzle; large lop ears; eye, hoof, and tail-tuft black; head erect and well-carried on a short, stout neck rising over the withers into a huge hump, frequently inclining to one side; back, short and straight; tail, high and well-set; chest, wide and deep; carcase, compact and solid-looking, with a large heavy dewlap; legs, clean, but massive, straight and fairly apart to support the carcase; skin, fine and covered with soft short hair. The prevailing color is white, and from their docility, the nose-string is seldom used. They are noble and handsome-looking animals, but there is a tendency in the breed to grow tall and leggy with a spare light carcase. Their powers of draught are great, and, when well-bred, draw much heavier loads than most other breeds, from 1,500 to 2,000 pounds on a fair road. They are chiefly used for draught in carts and to draw the plough, their height and size being against their use as pack bullocks generally. The cows are excellent milkers, some of them have been known to yield 18 quarts of good rich milk in the 24 hours[1] (a quart being equivalent to 24 ounces): they rear a calf at the same time.

The price of a first-class cow is about 200 Rupees, and even as much as 300 Rupees have been paid for a prize cow; that of a pair of bullocks 150 to 350 Rupees; the ordinary bullocks fetch from 100 to 150 Rupees the pair. Bulls have been imported into other districts at 300 and 350 Rupees each.

The influence of this breed extends north as far as the Kistna District. In Vizagapatam, Godavery, Ganjam, and Orissa a very inferior breed of cattle exists. They are small, under 12 hands in height, but with a fair long compact carcase, small short horns never exceeding 6 to 12 inches in length. They are used to draw the plough and cart, but are chiefly prized as pack animals, their small size and sturdy forms being well adapted for the hilly districts in those parts. About the Kimedy hills in Ganjam, there is a more diminutive breed with short and frequently crumpled horns. There is not much to be said in their favour, except that the cows milk fairly. About the Godavery District I have seen some handsome and well-formed cows; and to judge from their make, though small, with an erect carriage and a fine small head, a large outstanding udder and prominent well-developed teats, they must be good milkers, though they are not above 12 hands in height: the best milkers are said to yield from 4 to 6 quarts in the 24 hours. The price ranges from 25 to 35 Rupees for a cow; a pair of working bullocks, either for pack or plough, fetch from 40 to 60 Rupees. The ordinary load of a pack bullock in these parts is 160 lbs. From Godavery to Ganjam, the prevailing color is a light chesnut, shading off into a deep brown or red; and in Orissa, it is white. The average price of cows in these parts, Vizagapatam and Ganjam, range from 10 to 35 Rupees, and a pair of working bullocks from 25 to 40 Rupees.

Cuddapah and Bellary import their cattle chiefly from Nellore: these animals, from their size and powers of endurance, are well adapted to draw the cart or plough through the soft black cotton soil of the two districts first named. The trotting bullocks, used to draw carriages, generally come from Mysore, and fetch from 150 to 200 Rupees the pair, whilst the working bullocks which come from Nellore, fetch from 80 to 240 Rupees the pair. The prices of cows average from 35 to 70 Rupees according to their milking powers; and they are principally small animals bred in the district. The bullocks bred in the district are a small, hardy breed, chiefly used to draw the plough or carry the pack.

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The best cattle of the kind come from the Pennakonda Taluk of the Bellary District, more especially from Pamdurti and the surrounding villages where the country is hilly, and cattle bred to some extent. A good pair of working bullocks fetch from 40 to 70 Rupees.

North Arcot.—In this district cattle are bred in several parts, chiefly in the Poonganoor Zemindary, this estate being a continuation of the Mysore table-land. Cattle are also bred in the hill villages in the vicinity of Vellore, Kunneambady, Goodiattum, and Kungoonthy. They are of a small breed, rarely exceeding 12 to 14 hands in height, and having much of the appearance of the Mysore breed, with long straight horns about 2 feet in length. They are of all colors—white, brown, black, &c. Among these are found some bullocks of fair size, which are good trotters. They are chiefly used for agricultural purposes, to draw the cart or plough, and to act as pack animals to export and import produce. Their value ranges from 35 to 70 Rupees the pair. Fair milch cows are also met with, their value being dependent on their milking qualities, ranging from 20 to 40 Rupees in price.

South Arcot.—In this district the chief cattle-breeding places are the villages of Kookiyoor, Manmanthoor, Seroopaukum, and Sunkerapooram. They are the usual small breed of cattle with horns ranging from 10 to 18 inches in length. Many are good compact animals, and serve the purposes of all the ordinary agricultural operations of the district. There is nothing peculiar to distinguish them from cattle of other districts in which animals of a similar size are reared. The average value of a working pair of bullocks is from 20 to 35 Rupees. Cows milk scantily, and fetch from 15 to 35 Rupees each.

Tanjore.—In this district the cattle are of a small diminutive breed; and among these is a small hornless variety, which have a peculiar look from the complete absence of horns. Most of them have a small osseous protuberance in the centre of the forehead, between the parts where the horns are usually found. Though small, they are sturdy and draw the cart and plough very fairly, for which purpose they are used. A pair will fetch from 35 to 50 Rupees.

Trichinopoly.—In this district the cattle are chiefly bred in the villages of Valeecoondapooram, Rungenkedy, and Thouyoor, &c. They are of a small, useful breed, with horns varying from 10 to 15 inches in length. There is not much to be said in their favour, although some good specimens are met with among them. They fetch the usual price of from 35 to 50 Rupees the pair, and they are chiefly used for agricultural operations within the district.

Salem.—This is a good cattle-breeding district: the cattle are of small size, and resemble the Mysore breed somewhat, the prevailing color being white. They are very spirited and active, and trot well when used to draw a carriage. They are chiefly bred in the villages of Ahtoor, Namkul, Dharumpoori, Kistnagherry, Oossoor, Oothenkara, Tripatore, and Vaniembady, the hills in their vicinity affording good pasturage. The prevailing color is white. They have moderately-sized horns, ranging from 15 to 18 inches in length. The face is short, the eyes are expressive and prominent. They are of rather spare make of carcase, and are quick and active in their movements. They are much appreciated for their spirit and quickness, and make good trotting bullocks to draw light carriages. Some are sturdy and do well all the agricultural work required of them in the district. A pair of working bullocks fetch from 35 to 70 Rupees. Trotting bullocks cost 120 Rupees. The cows are considered fair milkers, and yield from 3 to 4 quarts in the 24 hours, and their value ranges from 20 to 35 Rupees when in full milk. This breed of bullocks is exported from Salem and Palghaut to Madura and Tinnevelly; and the undersized district-bred animals, though small, perform such agricultural work as may be required of them in these districts.

Coimbatore.—In this district there is a small sturdy breed of cattle well set in the carcase, an indication of great strength. They are generally much tamer than most cattle, and do the agricultural work of their district very well. The cows are considered good milkers, and are preferred by some people owing to their small and sturdy form. The bullocks fetch from 25 to 50 Rupees the pair, and the cows, when in full milk, 25 to 35 Rupees each. There is quite a different breed in the hilly parts of this district, and a large trade is carried on in them with the people of the plains. These animals are of a light make, and show something of the Mysore breed; they have long horns, with somewhat of a pendant dewlap, and slight, but graceful forms. The cattle are bred successfully, but would no doubt be materially improved by the introduction of fresh blood, as they have good forms, size, and powers of endurance; but, at present they look lanky without much stamina in bone or muscle. The prevailing color is white.

Malabar is not a cattle-producing district. The chief working cattle are imported from either Mysore or Salem; but there is a small, wretched breed indigenous to the district, and these extend from Malabar to South Canara. The prevailing color is black. The general form and shape is something like that of the English breed, except for their diminutive size. They have fine, thin necks, with a small well-shaped head and prominent sparkling eye. With these exceptions, there is not much to be said of them. The damp, moist nature of the districts in which they are found, and the want of proper food, pasture, and shelter do not admit of their being improved. Rather than

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do this, the natives prefer to import their working cattle from some of the neighbouring districts. A pair of working bullocks, imported into the district, chiefly from Mysore, fetch from 80 to 180 Rupees the pair; those bred in the district, fit for the plough, from 35 to 50 Rupees the pair; and milch cows, from over the ghauts, 40 to 50 Rupees each; and those bred in the district, 20 to 40 Rupees each. Some fine cattle, of a small breed, but resembling greatly that of Mysore, are met with in the Palghaut Division of Malabar. They are nice, graceful, active animals, and make good light draught as well as trotting bullocks, for which they are much esteemed in some of the adjoining districts.

From the foregoing review of the cattle in this Presidency, it will be seen that there are but two breeds worthy of special notice, and these belong to Mysore and Nellore. The best animals, either for drawing loads, trotting in carriages, or for agricultural purposes, come from these districts. I have known them to trot in a carriage from 8 to 10 miles an hour. Some very fine animals with great strength, powers of endurance, and quickness, have been secured among our karkhana cattle, which are sometimes recognized as Hoonsoor bullocks. Unfortunately, the want of pasture lands in most districts of this Presidency, and the indifference of the ryots, or cattle breeders, who fail to raise special fodder or pasture for their cattle, present obstacles to their improvement. Even the straw, raised with their grains, is frequently used to thatch their huts and is put to other uses, instead of being stored for the use of their cattle during seasons of scarcity.

From the Hindoo worshipping the cow, he never thinks of fattening it for purposes of food; he does not understand high-farming, or stall-feeding of stock, to improve both his stock and his land, the cattle-droppings being generally converted into fuel instead of manure. To the generality of natives a calf is a calf, no matter what sort of animal it may be. Should it prove to be a male, it will suffice for his purposes, eventually, to scratch the soil with his crooked plough; or if a cow-calf, it will breed, and perhaps not only give him a calf, but a little milk also; and why, he argues, should he trouble himself about improving his cattle which will cost money, when he has none to lay out, while, by following the practice of his forefathers, things take their natural course. The native never thinks of castrating his male calves at a tender age. In Europe the calves, as a rule, are castrated between the first and third month of their birth. At one time they were not operated on till they were two years old; but the former rule is now in general practice. The advantage of the operation at this early age consists in the improvement of the animal in form, size, propensity to fatten, and in the quality of the meat; while it renders him docile and generally useful as a working bullock. The native, on the contrary, waits till the animal attains five years of age, that is, sheds six of his milk-teeth, which are replaced by permanent ones. As soon as this process takes place, the bull is castrated without any cutting operation being resorted to. The animal is thrown and fastened down, the scrotum drawn out, and freely handled for a few minutes to relax it, when two stout wooden rollers about 15 inches in length and $1\frac{1}{2}$ inch in diameter, are tied tightly at one end and passed between the scrotum containing the gland and the body of the animal. Then, one gland is pushed up towards the abdomen, and the other retained in the scrotal sac, the rollers being drawn and the free end tied together. A man sits in front and presses the gland tightly against the rollers till the gland bursts within its sac, in the bag of the scrotum. He then seizes the broken gland between the fingers of both his hands, with which he kneads it well till it becomes broken up into a soft pulp. He then draws down the other gland between the rollers and crushes it also in the like manner, then smears a little cow-dung over the scrotum. At the same time, with a sharp bamboo or wooden needle, carrying a cord quarter of an inch thick, he perforates the cartilage between the nostrils, and fixes the nose-string, and, having secured it over and at the back of the horns, puts a cord around the animal's neck as a collar, to which the nose-string is loosely tied: the animal is then let loose. No further treatment is ever necessary; and I certainly think well of this mode of operation, for the animal is well and may be put to work in a week. There is no cutting wound, with subsequent inflammation and discharge, as is the case after a cutting operation. The scrotum swells, and in ten days or a fortnight the whole gland has become absorbed, and the empty sac remains. This operation is never attended with danger, nor does it appear to me to be a painful one contrasted with the cutting operation. So pleased was I with it, that I have since operated on a pony after this plan with success. The animals further retain their masculine form to a certain extent; but should any portion of the gland not be thoroughly broken up, they may occasionally prove troublesome among cows.(2)

The evil of this late castration consists in the young bulls being allowed to roam at large with the herd of cows; and, as the native breeder or village herdsman never thinks of segregating his cows from the bulls, even if there be a good bull in the herd, he is often over-reached by these young animals from their lightness of carcase and activity in serving the cows. At Madras, on the esplanade, this may be witnessed any day among the cattle grazing there; and the herdsman himself, as soon as he finds that a cow is in season, generally ties her

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down and encourages the younger animals, frequently some good-for-nothing two-year old bull to serve her, in preference to a larger and better animal, which is slow in his movements, since all the herdsman cares about is to ensure the impregnation of the cow. Several gentlemen about Madras have good English and other bulls, whose services may be obtained for the asking; but the native, although aware of the fact, will not avail himself of the advantage, as it will entail labour in taking the cow thither and bringing her back. The natives, as a rule, give their best attention to the bull calves for conversion into bullocks. The rule is that most ryots and other agriculturists or cattle breeders select or purchase a bull calf to make a pet of. After a while, they find a match for it, and the pair have frequently fancy rope halters put round their heads and are led about. Whilst the owners pursue their own occupations, the calves are allowed to brouse in the vicinity, and before they are taken home, either the ryot himself, or some member of his family, goes into the neighbouring fields and cuts a good bundle of green grass for their use at night, while the ryot's wife secures all the washings of rice, conjee-water, refuse-rice or raggy pottage after the family have finished their meal, which are put together and given to the calves. When the ryot cannot go out himself, either his wife, or some other member of the family, leads the calves out daily to feed among the bunds that divide the rice fields, along which good, fresh *Hurrialli* grass is to be found, tender and green; and, whilst the animals are feeding, the person in charge secures a bundle of green grass for them; besides which, they receive handfuls of cholum or raggy stalks or straw now and then, and this is always the best the ryots can lay hands on. As the calves grow older they get a little cotton seed, oil cake, rice bran, &c. The animals are tended with the greatest care and affection till they are about five years old,(5) when they are castrated and trained to the yoke, that is if they turn out good promising animals; but should they simply prove to be working cattle, at three years they are put to the plough and kept at light work; but, as a rule, they are never castrated before they are five years old. If intended for breeding bulls, they begin to use them when two or two and-a-half years of age. In my opinion they are right in concentrating all their attention on the bulls to the neglect of the cows, although I see, from the Adanki Cattle Shows, the Committee bewail, time after time, the systematic neglect of the cows by the ryots or breeders.(3) Cows need no special care: of course, it is well that they should get sufficient food to keep them in fair condition, and that is all that is required, as their influence only tends to one calf yearly, whereas the bulls, when properly tended to and cared for, can and do serve from 80 to 100 cows during the year. Thus their influence on the progeny is great and extensive, much more so than that of cows; and, I think, all judicious breeders should give the greatest attention, not only to the selection, but also to the food and care of bulls if they wish to improve their stock as a whole.

To show how indifferent the natives are as regards the improvement of their cattle I have only to relate that a few years ago, being greatly interested in the improvement of the cattle in the district in which I was then located, I selected a good medium sized English bull, just the stamp of an animal for the improvement of the small and indifferent breed of cattle so frequently met with in most districts of this Presidency, and notified that it was at the disposal of any one who chose to take advantage of the animal to serve their cows. Not a single individual came forward, and, as I had to leave the country shortly after, the Village Magistrate offered to take charge of the animal and do all that was required in the way of food and care. But to my regret, on my return to the station sixteen months after, I found the bull was dead, and soon learned that, after a short time, the Village Magistrate got tired of feeding this animal; and the villagers refusing to assist, he was let loose to pick up what he could with the country cattle, and before three months elapsed he died. Sometime after I purchased a second bull, a cross between the English and Nellore breed, and let him loose among the village herd, feeding him myself; but the natives took no interest in him, and I more than once caught the cowherd forcing his cows to receive the wretched two year old animals of the country, and his only excuse was that my bull was too slow to suit country cows. On leaving the district I removed him.

Attention is never given by the ryot to improve his cattle, so as to bring them into early maturity; so that it takes a heifer from four to five years to produce her first calf; whereas, if the necessary attention be given them in the way of proper food and care, there is no doubt whatever many would produce at two years, which would prove a great saving in the matter of keep.(4) As, however, in the majority of instances, it costs a native little or nothing to keep his cattle, early maturity never troubles him; but it would do so, if he had to pay for the keep of his heifer for four or five years to get a calf from her. I have had a calf from a heifer at the age of 27 months, and I have known of other instances. This, instead of forming the exception, would prove the rule if more attention were given to the subject. It is much to be regretted that from the latest reports, the Collector of the District of Nellore

is against cattle shows, and that too in the face of an improvement said to be evidenced in the young cattle exhibited, such improvement being no doubt the result of the shows themselves. It is pleasing, however, to observe that both the Board of Revenue and the Government direct their continuance. In my own humble opinion, I believe that these cattle shows have done immense good, if not in a direct, at least in an indirect way; and they should not only be continued, but extended to other districts.

It is not possible that any one individual can improve the breed of animals in this country. It requires a number of lives in succession, who are fully and pecuniarily interested in the question to do the needful; and altogether it is uphill work. Perhaps some one individual takes an interest in stock-breeding, and gets together a number of improved animals; but if he dies or leaves the country, and the cattle are sold and dispersed, nothing more is heard of them, the little improvement made is lost by subsequent bad feeding and want of care. I do not believe that, under existing circumstances, the cattle of this country can be improved at all, as most districts are generally deficient in pasturage for the greater part of the year; and, as a rule, no attention is paid to breeding or selection of stock, and no food is grown specially for the use of cattle. What is required, before the introduction of superior breeds or varieties, is that abundance of good food, both as green food and fodder, should be grown expressly for the purpose, and provision be made for good suitable pasturage in every district. Then, it will soon be found, that, in a few years, even the present undersized miserable breed of cattle will develop into superior animals. Not only should especial food be grown, but cattle should be carefully housed, well-fed, and be tended to. The bulls should be isolated from the cows till their services are required, and all males not required for breeding should, as a rule, be castrated before they are six months old. Under such a system I have not the least doubt but what India will produce stock that may stand comparison with those of England or any other country.

To recapitulate, the best and most useful breeds of cattle come from 1, Mysore; 2, Nellore; 3, Salem; and 4, Poonganoor; and the best milch cows are drawn from Nellore, Mysore, Coimbatore, Poonganoor, and Salem.

Age.—The age of cattle is generally estimated by the growth of the permanent teeth, and also by the several rings that form around the horns. Each year is supposed to add a ring or circular mark to the horns. Of the two systems, that of judging by the teeth is by far the most reliable. Even with this system, however, it is difficult to tell the age of a calf before it sheds two of its central milk teeth; and again there is a difficulty when the animal completes teething at the fifth year. At six years of age the eight permanent teeth are completed and attain a uniform level, and the mouth is said to be completed, literally what the native calls "*Vayee coodooguruthu*," when the animal is said to have attained its prime. After this the animal is supposed to decline or approach age. After the sixth year it is all guess work, and cannot be decidedly affirmed. Those, however, who have had much experience with cattle, can assign their age with tolerable correctness. Careful examination of the teeth, of the extent to which they have been worn down (this, to a great extent, may prove fallacious as the wearing down of the teeth will depend, in a great measure, on the kind of food the animal has been receiving), the markings of the horn, and the general appearance of the animal itself will help to decide the question. At birth there are two central milk teeth or incisors in the lower jaw, the upper continuing naked. During the second week four teeth make their appearance; at the third week six, and when the mouth has been completed eight milk teeth are established. After this the age can only be guessed by the wearing down of these milk teeth, when the calf is six months old; the two central incisors first begin to give indications of wear and tear at 12 months; four teeth at 15 months; six teeth at 18 months; and the whole of the eight teeth are well worn down at two years, when two of the central incisors are shed and replaced by permanent teeth, which are readily distinguishable, from their size and form, from the milk teeth. At three years four teeth, at four six teeth, and at five years the whole eight permanent teeth make their appearance and complete the mouth, while at six years of age these begin to wear down. The natives of India are thoroughly conversant with this method, and many of them are shrewd, clever, judges as to the age of cattle. Cattle, both bulls, bullocks, and cows, attain to a good age when taken care of; and the fecundating powers of bulls and cows are retained till over twenty years of age. I think I have said enough for the purposes of this essay. I had intended briefly noticing the diseases cattle are liable to, and for years I have had it in contemplation to produce a manual on cattle diseases; but books of the kind do not sell, as few people in India take an interest in domestic animals. The Government hold out no kind of encouragement, the taking of six or a dozen copies by Government, and perhaps double that number by the public, will not cover the expense of publishing, much less to remunerate the author for his labour.

It may not be generally known that grand cattle fairs or markets are held in most districts during the chief Hindoo festivals or Jathras, annually, such as Teroonamally in

South Arcot, Strirungum in Trichinopoly, Madura in Madura, Tripethy in North Arcot, and Humphy in the Bellary District. In like manner most other districts hold cattle fairs, when young and promising stock are taken from great distances for sale, with the double object of celebrating the festival and disposing of their cattle; this is well understood by the natives generally, and no notices or advertisements are ever resorted to make these places known. I have visited some of these fairs.

Notes thereon by the Examiner :—

(1.) Very rare indeed; the average yield is only from 5 to 8 quarts of milk daily.

(2.) The operation described is seldom performed in a perfect manner; the European plan of castration is, by far, the best.

(3.) The writer is decidedly wrong here; if the cows are to be left to the careless management he so deplores in other parts of his report, it will be impossible that they can produce good bull calves.

(4.) This is rather inconsistent after expressing the opinion noticed in the preceding paragraph.

(5.) This statement is rather at variance with the statements made in the earlier part of the report regarding the treatment that cattle receive at the hands of the ryot.

We believe that Dr. Shortt has answers to these remarks, but we were not supplied with them before going to *press*.—Ed. R. R.

THE FAMINE: THE POSITION.

There is every reason at last to hope that the almost superhuman exertions of the Government to meet the calamity which has threatened the country for so many months, will be crowned with success; and that for the first time in modern history, we shall have seen a terrible famine fairly surmounted by the humanity and resolution of Government. For the first time, has the calamity been met in the right spirit; and the Government, to its lasting honour, has addressed itself to the task of saving the people alive, with the same nerve and determination which we expect it to display upon the outbreak of a great war. Lord Northbrook may well be envied the distinction of having inaugurated the great revolution in administration which this event marks. And after all—Is an apology needed for an expenditure of five or ten millions of money to save as many poor creatures from the dreadful death of famine, when we are all prepared to justify and applaud to the echo, the resolution to spend ten, nay fifty, times that amount if need be to preserve in our hands the rule we have assumed in the country? If any justification of that rule were wanted, we have it to-day—dashed only with the fleck of the unworthy resolve of Parliament against the will of the people, to bear no part in the money cost of the unprecedented administrative feat being accomplished under its eyes. For it is clear that the people of England would compassionately have borne part of the burden had India asked England that it should be so; and never until now did we contemplate the relations between the two countries with a satisfaction so little tinged with alloy. The complaint that Government may possibly be found at last to have done a little more than was absolutely necessary is not worth a reply. The gentlemen who put it forward show in every line of their writings how incapable they are of estimating the real position of affairs, and how happy it is for the credit of the empire that they are relegated to the position of mere critics of what has been done.

There is every reason to hope that the country is escaping, though as it were by the skin of its teeth, a calamity that would have been perfectly appalling but for the interference of the State. Look at the following facts.

In spite, then, of the rubbee harvest in Behar, the successful boro rice crop in Bengal, the unprecedented harvest in Burmah, the vast, unhoped-for supplies of grain from the Punjaub, the enormous stores of food in the hands of Government hanging over the market, and money for months together at 14 to 18 per cent, the prices that are prevailing in half the districts of Bengal at this moment are as follows :—

	May 1866.		May 1874.	
Dinagepore...	16	Seers.	8⅛	Seers.
Maldah.........	11½	„	9½	„
Rajshahye......	12	„	11½	„
Rungpore	17¼	„	7¾	„
Bograh.........	17	„	10½	„
Pubnah	11¼	„	12	„
Julpigorée.....	17	„	7 @8	„
Patna...........	13½	„	13	„
Gya.............	10	„	9	„
Shahabad......	10½	„	11	„
Tirhoot.........	9	„	8	„
Sarun	11½	„	12	„
Chumparun...	9	„	10	„
Monghyr	10	„	10¼	„
Bhaugulpore..	11¼	„	10	„
Purneah	12	„	11	„
Sonthal Pergunnahs.....	10½	„	11	„
Average...	12⅓	„	10	„

Let the man conceive who can what the condition of these districts would have been, and what the prospect before them, but for the enormous stores held over the markets by the State. We know what happened in the same districts in 1866, although prices in May of that year were fully two seers lower than they now are, in presence of the most powerfully

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depressing causes. As it is, we are entering upon the famine months with rice at 10 seers only for the Rupee, in spite of the superhuman efforts we have made to lower the price by placing vast Governmental stocks upon the spot, to keep the markets down. With this single fact patent to the world, the men are idiots who carp at the Governmental action as excessive. The simple and sufficient reply is—the quotation of rice is at 10 seers the Rupee over half Bengal, in spite of all that has been done.

Turning to the Eastern Districts and Lower Bengal, the quotations at the two periods compare as follows:—

	May 1866.	May 1874.
Dacca..........	11 Seers.	13 Seers.
Furreedpore...	10 „	$12\frac{3}{4}$ „
Backergunge..	13 „	$14\frac{1}{2}$ „
Mymensing...	14 „	$15\frac{1}{2}$ „

It is in these quotations that we see the happy effects of the Government importations. They have lessened the strain upon the exporting districts of Lower Bengal. We are not yet out of the wood, however: very far, we fear, from it. The course of prices in Calcutta in 1866 was as follows:—

Common Rice.

	RS.	A.	P.	
April..............	3	10	0	(Highest.)
May	3	12	0	„
June...............	4	0	0	„
July................	5	0	0	„
August...........	5	4	0	„
September......	5	8	0	„
October.........	5	8	0	„
November.......	5	12	0	„
December.......	4	4	0	„
Do. 31st...	3	4	0	„

We have repeatedly tried to familiarize our readers with the fact that it is from *now* onwards that the famine will begin to be really felt. Lower Bengal has reaped the last harvest of the agricultural year with its *boro* crop, and is now entering upon six months of constant depletion of its food-stores without any possible accession to them. What may we reasonably expect to find the course of prices in Calcutta during that period?

The exports of rice from Calcutta during the last four years have varied according to the period of the year as follows:—

	1870. Tons.	1871. Tons.	1872. Tons.	1873. Tons.
January to March ...	109,886	86,930	118,950	160,851
April to June	56,720	49,214	93,781	64,377
July to September ...	73,124	65,241	88,002	54,441
October to December.	76,157	83,843	77,981	45,938
	315,887	285,228	378,714	325,607
Average, 3 months ...	105,299	95,076	116,238	108,535

If we add the shipments from Chittagong to the account, we may say roughly that the total exports from Bengal have averaged of late years about 25,000 tons a month, from April to December inclusive. What effect present prices will have upon the export of the *next* seven months, no one can predict with any certainty. They will not improbably reduce it to less than half the usual quantity, or 10,000 tons instead of 25,000.

At this rate, we shall have a demand of about 300,000 maunds a month to satisfy, from the narrow reserves that will be finding their way to Calcutta during the period. The consumption of the city itself meanwhile, will probably not exceed 500,000 maunds. Mr. Cotton estimates the monthly consumption of Calcutta and its suburbs, when prices are at their normal level, at about 600,000 maunds. It is most difficult to say what effect a demand of 300,000 maunds a month for export will have on prices during the next seven months, when the food-stores of the surrounding districts are reduced by the failure of the harvest, and the advanced season of the year, to the very narrowest limits. We fear we must expect to see severe famine prices ruling in Calcutta down to December next. And this, upon the supposition that the export will fall from the normal rate of 25,000 tons a month to 10,000. It seems to us unreasonable to expect anything else. We know that throughout the districts that supply Calcutta with rice, the harvest was marked by failure to a greater or less extent; that the agricultural classes, as a measure of precaution, will reserve a larger share than usual of this harvest for their own wants; and that an unusually heavy drain will be steadily felt throughout Lower Bengal to meet the scarcity in Behar. In these circumstances, it will be with difficulty, we fear, that this city will obtain the half million of maunds a month required for its own consumption; while the export, even upon no greater scale than we have supposed, will heavily increase the demand upon the surrounding districts. Instead of half a million of maunds a month, the city will demand 800,000 maunds for herself and for the foreigner. It is all but an economic certainty then, that this export demand will indefinitely affect prices throughout the districts upon which the demand will fall. If we could keep prices from July to November in Calcutta at 10 or 11 seers the Rupee instead of 8 or 9, it would be a great mitigation of the position; for it is the price in the Calcutta market that mainly determines prices throughout Lower Bengal, and if we can keep prices below famine range in Calcutta, we shall probably be able to keep them so throughout the Lower Provinces. —*Indian Economist*, May 30, p. 257.

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